Engineering Library

AMERICAN ARTISAN and Hardware Record

VOL. 74. No. 4. CHICAGO, JULY 28, 1917. $2.00 Per Year.

JUL 30 1917
UNIV. OF MICH. LIBRARY

THE COOPER OVEN THERMOMETER

"The Leader for Over Twenty Years"

The Sign of Quality in a Range

Every day the necessity of having a **good oven thermometer** on a range or cook stove grows more important. This is caused by the fact that the public is realizing more and more each year, the importance of properly cooked food.

New ideas in cooking and the ever increasing number of new "dishes" make it necessary for the up-to-date housewife or cook to have a **good oven thermometer** on her range or cook stove.

With the **COOPER OVEN THERMOMETER** it is possible to do baking of all kinds with reliability and exactness.

In the manufacture of the **COOPER OVEN THERMOMETER** only the highest skilled labor is employed. The material used is of **the very best,** and while the **COOPER OVEN THERMOMETER** is inexpensive, its construction is very strong and efficient.

Make the **COOPER OVEN THERMOMETER** the ***Sign of Quality in Your Make of Ranges or Cook Stoves.*** It is sure to be a business booster for you.

Write for our Catalog and Sample Today—Be Convinced.

THE COOPER OVEN THERMOMETER CO.
PEQUABUCK, CONNECTICUT

ALPHABETICAL INDEX AND CLASSIFIED LIST OF ADVERTISERS, 50 and 51.

THE ONLY REAL RUST PROOF RANGE

RINGEN STOVE CO.
DIV. OF AMERICAN STOVE CO.
ST. LOUIS, MO.

THE BODY and all FLUES, exposed to Smoke and Soot are PORCELAIN ENAMELED
NO RUST! - NO BLACKING! - ALWAYS CLEAN!

SAN FRANCISCO, CALIF.
715 INDIANA ST.

FRONT RANK Steel Furnace

TRADE NAME REGISTERED

plus FRONT RANK Service afford the live Dealer the most attractive Furnace Proposition on the market today.

TRADE MARK

The FRONT RANK Steel Furnace is simply and strongly built of tight-riveted steel; is easily cleaned; stays in order; is durable and fool-proof. It gives dealers the maximum profit and minimum trouble, because it gives consumers the maximum service and satisfaction. But besides furnishing an A-1 Furnace.

We Help FRONT RANK Dealers

by furnishing them attractive window and counter cards, with "pep" and "punch" in them, calling attention to the FRONT RANK Steel Furnace. We give them store signs, that stir up trade. We furnish them cuts for their local news-paper advertising. We give them all kinds of "dealer helps," and above all, we are spending thousands of dollars in a National Advertising Campaign that will make the name of the FRONT RANK Steel Furnace a household term from sea to sea.

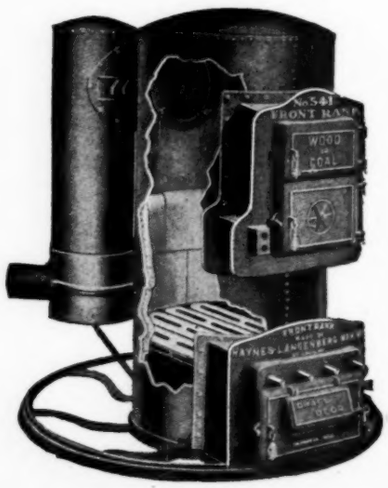
Don't you want to join the FRONT RANK Club? Write us for particulars.

Good bye! We're going home FRONT RANK is too hot for us.

TRADE MARK
REG. U. S. PAT. OFF.

Haynes-Langenberg Manufacturing Co.

4058 Forest Park Blvd.
St. Louis, Mo.



ESTABLISHED 1880
Representative of
The Stove Tin Hardware
Heating and Ventilating Interests
PUBLISHED EVERY SATURDAY

AMERICAN ARTISAN and Hardware Record

Address all communications and remittances to
DANIEL STERN
Publisher and Proprietor
910 South Michigan Avenue
Chicago Illinois

TERMS OF SUBSCRIPTION IN THE UNITED STATES AND ITS POSSESSIONS (Invariably in Advance) ONE YEAR POSTAGE PAID $2.00
FOREIGN COUNTRIES ONE YEAR POSTAGE PAID $4.00 CANADA ONE YEAR POSTAGE PAID $3.00

Entered as Second-Class Matter June 25 1885 at the Post Office at Chicago Illinois under Act of March 3rd 1879

VOL. 74. No. 4. CHICAGO, JULY 28, 1917. $2.00 Per Year.

THE EVIDENCE that trade activity throughout the United States is as widespread as ever, is found in the fact that in one hundred and forty-four cities, bank clearings during June reached the highest total ever reported for that month—furthermore in twenty-three of these cities, the total was the largest ever recorded in any month. When we consider the United States a whole, the June total was the heaviest reported in any month so far this year, the increase over 1916 being nearly 30 percent, and for the last six months about 25 percent. It is also significant, that the showing for the second quarter was considerably better than the first quarter, the entire country giving surprising totals.

Trade as Active as Ever.

Reports from the great trade centers show that the country is doing a remarkable business, much of the activity resulting from the placing of immense Government orders for war supplies, foodstuffs and other material. The effort to regulate prices has naturally caused a certain amount of unrest, but this influence has not been far reaching because of the enormous ordinary business actually in sight. The spending power of the country may be said to be unprecedented for at least the time being. The retail trade in most cities is good, although the progress of the economy campaign is causing people to think twice about making heavy outlays for what might be considered luxuries.

The latest crop reports are highly favorable, giving promise of an increase of about 1,000,000,000 bushels of all grains compared with the production of about a year ago. The indications point to the second largest grain crop ever raised, the third largest barley crop, the second largest oats crop, a heavy yield of potatoes and a record breaking crop of rye, sweet potatoes and tobacco. These estimates reflect the energetic efforts of our farmers to increase the production of foodstuffs. If the promise of a good yield is realized, we should have lower food prices during the coming year than in the year past, and no other single factor could be so helpful and reassuring in the industrial situation.

These encouraging reports of continued trade activity and crop situations should serve to convince those who have a pessimistic outlook on business conditions, that the present at least is no time for any decline in business activities. It is true that the present conditions are radically different from those which practically all business men have met in their day, but a proper conception of the present state of affairs and the right amount of confidence in the developments of the future, will enable them to weather the storm and pass safely into the haven of continued progress.

IN CONNECTION with their business, many retail hardware dealers handle lubricating oils, paints or paint oils. These naturally bring about a decided fire hazard, which too often is underestimated and overlooked until the damage has been done. The careless storage of these oils tends to soak the floors, walls and fixtures with the highly-inflammatory liquid, and the debris scattered on the floor often starts a fire by spontaneous combustion. In other cases, spontaneous combustion takes place in clothes or waste rags which have come in contact with the oils and have not been sufficiently aired.

Hazards in Storage of Oils and Paints.

Very often the retailer who sells lubricating oils, paints or paint oils keeps them in some corner or in the back room and possibly in the basement. His object is to put the containers where they will not be easily seen by the customers, and in so doing, he generally gets them in the most poorly lighted and ventilated place in the building. It is always dangerous to store these oils in dark corners or in places that are not properly ventilated, and many disastrous fires can be traced to this practice.

At no time is there any reason for the dealer's neglecting to take the necessary precautions and eliminate the fire hazard. He can obtain equipment which obviates the dangerous and unpleasant features of handling oils, and at the same time enables him to serve his customers more efficiently. Dealers who still cling to the antiquated method will do well to consider the advisability of getting in tune with modern practices.

AMERICAN ARTISAN AND HARDWARE RECORD has for years given whole-hearted support to the matter of industrial education, especially as concerns the young sheet metal worker. Time and again the merits of proper instruction for the sheet metal apprentice have been emphasized to the trade, and the untiring efforts of such zealous workers as this publication are slowly but surely being crowned with success.

Instruction in Sheet Metal Work.

The sheet metal industry is large and constantly growing. It is intimately associated with the building trades, and a material portion of the costs of buildings are spent for metal cornice work, metal roofing and skylights, metal ceilings and walls, ventilating and

heating systems, etc. The unexampled growth of the automobile industry requires the labor of thousands of men on bodies and radiators, and the invention of sheet metal boats, metal furniture and other metal articles is opening new fields every day. The sheet metal working trades offer unusual opportunities to young men who are trained, and employers and educators are gradually realizing that it is to the best interests of all in the industry to have journeymen who know their work.

Various schools have instituted courses in sheet metal work, many of them at the suggestion of associations of sheet metal contractors. A noteworthy example is the David Ranken, Jr., School of Mechanical Trades in St. Louis, which has an admirable course in sheet metal work under the direction of the sheet metal contractors of that city. Six schools in Cleveland, five in Pittsburgh, two in New York City, two in Minneapolis, two in Rochester, the Public Schools of Milwaukee count their sheet metal courses of equal importance to others in the scheme of technical training. This instruction insures a steady supply of trained workers for the various phases of the sheet metal industry, and "trained workers" means that the progress of the industry will not lapse. In many parts of the country there still is room for instruction in this work, and those who have the interests of the sheet metal industry at heart will not for a moment abate their efforts to inaugurate such courses wherever possible.

The Y. M. C. A.'s Part in the War.

THE Young Men's Christian Association is enlarging its service to enlisted men in the United States Army and Navy, and at the same time is desirous of enlarging its service to industrial workers, who are the allies of the men under arms and so great a factor in national defense. Those who direct the activities of the Association realize that the war is being fought in our factories as well as upon the battlefields. As President Wilson says, "Our industries, farms, shipyards, mines and factories must be made more efficient than ever. . . . Let us use to the limit everything that makes for all-around efficiency—physical, mental and spiritual."

The experience of hundreds of industries has shown that the Y. M. C. A.'s service to workers in industry tends to stabilize labor, to promote good will, and to increase efficiency. The Association is now sending a letter to employers offering to serve the employes in industrial plants in one or more of the following ways:

The Building of the Young Men's Christian Association may be made of larger use to the men and boys in industry, along social, physical, religious and educational lines.

The Industrial Extension Secretary of our local Association can organize a great variety of activities in the plant or community which will be welcomed and used by the employes who are unable to use the Y. M. C. A. building.

A Plant Secretary can be provided for any industry which is willing to take his full time. A number of such secretaries are employed by industries having 2,000 or more workers.

A Branch Building can be located so as to serve the employes of an industry or group of industries.

Similar announcements to employes, telling of the benefits of the buildings, physical work, educational activities and religious activities of the Y. M. C. A. are also being used by local associations to help men keep themselves fit in time of national and individual strain. Employers will no doubt realize that it will redound to their advantage to encourage the activities of the Y. M. C. A. because the need of the hour is for the very best that is in each man, and the Association is recognized to have increased happiness, contentment, thrift and production wherever it has been established.

Are You Going to Take a Vacation?

VACATION time this year does not mean as much as it did in years gone by, because of the backward summer, and because a meager and unthinking minority have been advising the American people to forego their rest and renewal so that the nation may throw its whole available strength into the war for liberty. This is poor advice, for it is not the advice of those who know how gigantic the task is the country faces and how it may best be prosecuted with victorious energy. To accomplish a great task, our strength must be at par or above, and the unprecedented conditions of today call for men refreshed and rebuilt, for great physical vigor and mental alertness.

The slogan in vacation regions should be "Business as usual," and the Federal Government itself, speaking through the Secretary of the Interior, Franklin K. Lane, has directed attention anew to its national parks and the opportunities they afford for recreation and strength building. The Government does not desire people to forego their vacations—on the contrary it would stimulate rather than obstruct their enjoyment of such advantages. Leaders of the nation realize that the weary should seek their accustomed relief from toil and that those who are worn out or run down should recuperate.

A man with little vitality is the most inefficient type of worker. He owes it as much to his country as to himself to rebuild his depleted strength and freshen his interest in his business activities. The universal custom of taking a short or prolonged rest when the great outdoors offers its many attractions has served each year as a tonic to restore efficiency in the highest degree. The American people have perhaps never in their history put greater energy into a year's work than they have since last vacation time. The next year will demand even greater effort and never has there been greater need of rebuilding. The great army of workers, the army behind the fighting army, must be as fit and as fresh as the soldier.

So take your vacation as always! The Government invites you to visit its great playgrounds, and there are thousands of other places in which you can find rest and enjoyment. Do not destroy your capacity for work by doing nothing but work. The great task ahead of us demands that we rest and rebuild as much, if not more, than ever.

RANDOM NOTES AND SKETCHES.

BY SIDNEY ARNOLD

Albert E. Whittier, the president of the Cooper Oven Thermometer Company of Pequabuck, Connecticut, looked hale and hearty when I met him in Chicago during the week. Mr. Whittier is as keen and eager as ever about improving his product and business, and the Company is now turning out something like five hundred oven thermometers a day. Being so intimately connected with the stove trade, it was only natural that he should tell a pertinent story, which he did as follows:

Once a householder secured a colored cook at an employment agency and brought her home with him. She knew nothing about gas stoves. So the new employer took her to the kitchen and explained the range. So that she could see how it was operated he lit each of the many burners. While still explaining, a message called him from the kitchen, and he left her, saying:

"I guess you will find that it will work all right now, Mary."

He didn't see the cook again for four or five days, when, entering the kitchen, he said:

"Well, Mary, how's that range doing?"

She replied: "'Deed, suh, dat's the best stove I ever see. That fire yo' kindled fo' me fo' days ago is still a-burnin' an' it ain't even lowered once."

* * *

F. A. Carpenter whom everybody in the hardware line knows and admires, was at the Mixers' Table at the Chicago Hardware Club the other noon when he told a few of the stories which had been sprung in the Smoker on the train the evening before. Here is one of them:

There were four of us talking confidentially in a corner of the smoker.

"I tell you, boys," exclaimed a loud-voiced drummer, "I'm proud to say that no house in the country has more men pushing its line of goods than ours."

"Humph! What do you sell?" asked a curious one.

"Baby carriages."

* * *

If I were a traveling man, and the Palace Hotel were the only hotel in the town of Bismarck, North Dakota, I suppose that I would have to put up there—but I don't think I'd care to have my mail addressed to that hostelry. Why? I have just received three letters which the hotel has returned. The letters were addressed to Carl Carney, care the Palace Hotel, and were postmarked July 3, 1913; July 25, 1913, and March 28, 1914. The letters had been neglected for three to four years. It certainly doesn't savor of modern service, or any kind of service for that matter. Mrs. Arnold is keeping the envelopes as souvenirs and she will be pleased to exhibit the curiosities to anyone who cares to see them.

* * *

Fred M. Huggins, who is on the Executive Committee of the "Old Guard" Southern Hardware Traveling Salesmen, writes me from his ranch at Meridian, Texas, that business is pretty lively in that "neck of the wood." The heat is awful but the discomfort is alleviated by the good rains. There will be plenty of corn and cotton this year and hence plenty of money.

Fred returned from a six day trip to towns in New Mexico, El Paso and San Antonio last week, and is now on a flying trip to New York. He has been pretty active lately—in fact, so active that he says he will have no time for a vacation this summer. I think I am quite safe in assuming, however, that he is enjoying life, for he has the right kind of a disposition and the right kind of a helpmate.

* * *

Bill Foege was at the Hardware Club of Chicago the other day and half a dozen asked him simultaneously what the price of barbed fence was that day. He said, "Oh shucks! Don't ask me for quotations today, let me tell you about my friend Mr. Bings." He then related:

It was very late when Mr. Bings came home. To his great annoyance he found that he had forgotten his latchkey and was obliged to ring the bell.

Mrs. Bings opened the window.

"Who's there?" she inquired.

"It's me, love," said Bings.

"Where have you been at this time of night?"

"I've been sitting up with a sick friend, my dear."

"Oh, you have, have you?" snorted Mrs. Bing. "Well, you'd better go right back to him. You ought to be ashamed of yourself to desert him at this hour."

Then she slammed the window down and retired.

* * *

George A. Dickson of the Pittsburgh Steel Company was walking down State Street the other day when his attention was called to two pals, both dressed exactly alike and each of them with a new suit, neither of which was a perfect fit and when George's attention was called to it he said: "Oh, I heard Mrs. Dickson last night conversing with some ladies and one of them told this tale:

"Will you alter this gown to fit me?" asked the young lady of her dressmaker.

The costumer raised her hands in pious horror.

"Certainly not, mademoiselle, certainly not," she answered. "Why, that isn't done any more. You must be altered to fit the gown."

* * *

The poet who wrote the following three short verses was quite right in his judgment. Smiles may appear on the lips of a person. His eyes may even laugh, but if in his heart he has no love, the smile on the lips, nor the laugh in the eyes, has no true foundation, and neither will help the one "whose life is dreary."

The Home of Smiles.

I would like to find the home of smiles,
The kind that are bright and cheery,
Those smiles that are seen on a friendly face,
At the time when your life is dreary.

Like the sunshine in the summertime,
The smiles that come and go,
And whence they come or where they go,
That's what I'd like to know.

I've heard they dwell between the lips,
Others say in the eyes they start,
But I believe, and think I'm right,
The home of smiles is in the heart.

UP TO THE MINUTE NEWS SIFTINGS

Directors of the Lehigh Stove & Manufacturing Company, Lehighton, Pennsylvania, have decided to issue bonds to the amount of $60,000, for increasing the output of the plant.

IRELAND & MATTHEWS MANUFACTURING COMPANY COMPLETE NEW FACTORY.

The Ireland & Matthews Manufacturing Company, Detroit, Michigan, makers of stove trimmings, sheet metal goods, automobile supplies, etc., have just completed their new factory and are about to move into it. The main building is four stories high, measuring 656x120 feet, and in addition, there is a large one-story press building, 73x368 feet; a two-story brass cast foundry, 56x128 feet, and a power house 56x178 feet, giving a total floor space of 250,000 square feet and occupying about 5½ acres. The factory cost approximately $600,000 and represents an increase in capacity of about 50 percent over the old plant.

COMPENSATING OVEN THERMOMETER GIVES EXCELLENT RESULTS IN CONSTANT SERVICE.

The Compensating Oven Thermometer, which is the invention of Albert E. Whittier, President and Treasurer of the Cooper Oven Thermometer Company, has been tested in constant service for over two years and found to give excellent results. According to Mr. Whittier, this device, shown in the accompanying illustration, has a characteristic that no other oven thermometer has, namely, its ability to hold the pointer rigid at any degree of heat. This is accomplished by using two thermostatic strips fastened at one end, the other end being free, with no connections, links or slots.

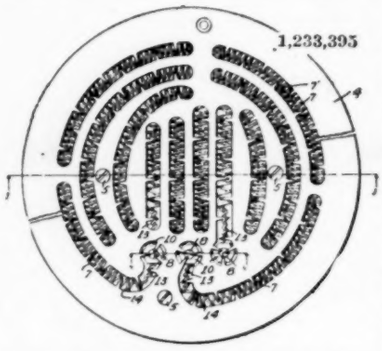
Compensating Oven Thermometer.

Attached to the spindle which carries the pointer is a lever having two arms, one on each side, and when adjusted, one thermostatic strip bears against one arm and one against the other, both traveling in the same direction. When the thermometer is heated, one of the strips carries the pointer across the dial and the other travels with it, keeping a tension on the opposite arm. On cooling, the action is exactly reversed.

With this thermometer, it is said, very accurate calibration can be secured, and the construction, while inexpensive, is strong and efficient. The reason it is called the Compensating Oven Thermometer is that when in operation, any lost motion is compensated for by one thermostatic strip, while the other is doing its work. Full particulars can be obtained by addressing the Cooper Oven Thermometer Company, Pequabuck, Connecticut.

PATENTS ELECTRIC HOT PLATE OR HEAT UNIT.

Under number 1,233,395, United States patent rights have been granted to James C. Patten, Kokomo, Indiana, assignor to The Globe Stove and Range Company, Kokomo, Indiana, for an electric hot plate or heat unit described in the following:



A heating coil having burnout reducing terminals comprising a looped resistance wire, the ends of the wire being twisted around the portions of the wire intermediate the loops and the turns of the coil and being in intimate contact with said portions to increase the cross section of the current conductor, and the end turns of the coil being expanded, the whole resulting in a decrease in the amount of heat generated in the vicinity of the terminals.

CO-ORDINATION.

Business is, of course, the exchange of goods or service for profit. If a business is sufficiently simple or the transactions sufficiently infrequent, one person can produce the goods or render the service as the case may be, and handle the detail besides. It is a one-man affair and co-ordination plays no very heavy part in it. As soon as the business reaches such proportions that assistance is required, as soon as more than one human element is involved, co-ordination becomes one of the controlling factors in its destiny.

No business ever became great without a close co-ordination of the departments of its organization; a smooth, eager, harmonious unity of purpose in the service of a common ideal. No business stays great, indefinitely, without it.

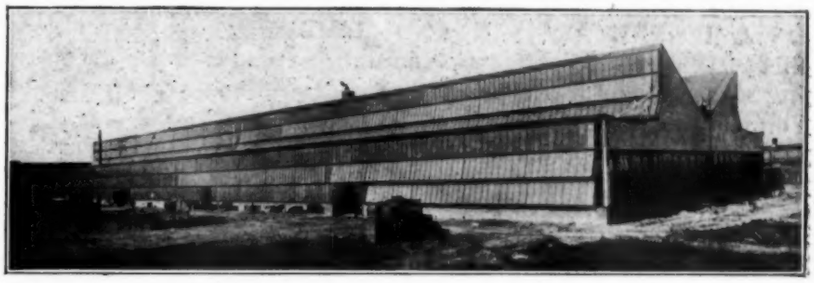
A business is much like a clock whose mainspring is the administration and whose many wheels are the various departments—no one of value without the rest, and the whole valueless without co-ordination of all the parts. True, a clock may appear to run without some of the smaller wheels, but it is a failure as a timepiece.

Co-ordination is a good barometer of individual business. Where it is "high" in an organization, the chances favor a smooth and prosperous course. The converse is equally true.—*Disston Crucible.*

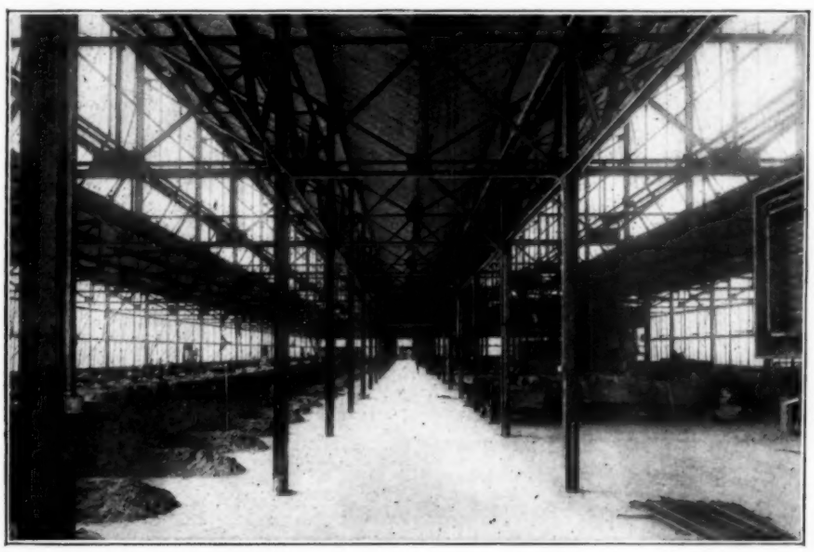
OPERATIONS IN NEW PLANT COMMENCED BY CLEVELAND CO-OPERATIVE STOVE COMPANY.

The new plant of the Co-operative Stove Company, one of the notable representations of modern ideas in factory construction, which has just been erected in the newly-developed manufacturing district along Harvard Avenue in Cleveland, has commenced operations.

It required six months to build the plant. The main building or foundry, an exterior view of which is given in illustration Number 1, is 500 feet long and 135 feet wide, and has two molding floors, each 500 feet long and 60 feet wide, with a 15-foot center aisle running between them. A splendid view of the foundry floor is given in the second illustration. The structure was erected with special attention to the matter of light and ventilation. It is of brick, steel and glass, with the two sides and end practically all glass. The roof construction has the appearance of a gigantic letter V, which affords means of adequate ventilation.



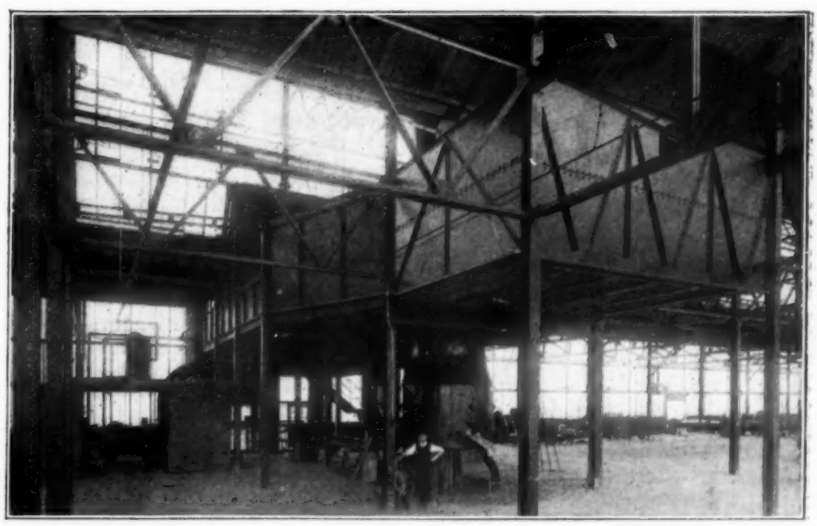
Number 1—Exterior View, Foundry of New Plant of Co-Operative Stove Company.



Number 2—Interior View of Co-Operative Stove Company Foundry.

The glass walls will allow a sufficiency of daylight to enter the foundry, while the ventilation system has been arranged to carry off the smoke and fumes. The cupola loft and charging floor, as shown in illustration Number 3, are of steel and concrete construction and built to carry a week's supply of pig iron and coke. The principal feature is the cement floor covering the entire plant area, which provides an even and level working surface for the moulders. In addition to the main foundry, there have also been built the necessary sand sheds, coke storage bins and pattern vaults, all of which are of brick and concrete construction, durably built.

The many features of the plant were worked out by the builders in conjunction with John H. O'Brien, president of the company. Mr. O'Brien is one of the most enterprising men in the trade, having been with the Cleveland Co-operative Stove Company for more than thirty-five years, starting as stove polisher, and advancing steadily until he was elected president in January of this year. He decided to install the most modern equipment in the new plant, and all the apparatus, including blowers, air compressors, tumbling barrels and polishing machinery, is driven by direct-connected motors so that there is not a belt in the entire plant.



Number 3—Cupola Loft and Charging Floor in the Foundry.

VANITY.

Vanity is the magnifying glass of conceit. Looking through it the vain man sees in himself a mental, moral or physical giant to whom all the world looks up.

The great world itself looking down sees a tiny unfortunate part of itself in him who can see more in a mirror than he can out of an open window.

Vain men are usually bright men. The vain man's standard subject of conversation is himself and capital I fills his letters. Friends flock to him, but this vanity disgusts and drives them away. He is his own worst enemy.

Every cheerful thought points the way to another.

THE WEEK'S HARDWARE RECORD

Of Interest to Manufacturer, Jobber and Retailer

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing western hardware and metal prices corrected weekly. You will find these on pages 44 to 49 inclusive.

The Hagerman & Stores Tool & Machine Company, Bay City, Michigan, are planning to build an addition to their plant.

The capitalization of the Adrian Wire Fence Company, Adrian, Michigan, has been increased from $300,000 to $600,000.

It is expected that the new plant of the American Fork & Hoe Company, Jackson, Michigan, will be completed and in operation by October 1.

The Fraser Hardware Company, Detroit, Michigan, has been organized with an authorized capital stock of $15,000, of which amount $10,000 has been subscribed and paid in in property.

The American Safety Nut Lock Company, New York City, has been incorporated with a capital stock of $100,000. Arthur C. Platt, W. J. Arkell and A. A. Kelly of Montclair, New Jersey, are the incorporators.

It is reported in financial circles that ocean rates are soon to undergo revision. There is to be international freight rate regulation by America, France, England, Italy and Japan, regardless of the diminished tonnage which will be welcome news to shippers.

The Evertite Locknut Corporation, 37 Wall Street, New York City, has been incorporated with a capital stock of $150,000 for the manufacture of lock nuts and other mechanical devices. A. F. McCabe, G. F. Jebbet and A. E. Moore are the incorporators.

The Superior Manufacturing Company, Gloucester, Massachusetts, has been incorporated with a capital stock of $60,000 to make hardware. The incorporators are Benjamin A. Smith, Thomas P. Bolger and Frederick H. Tarr, all of Rockport, Massachusetts.

Juan Homs, Trade Commissioner for the Department of Commerce, was in Chicago during the week, conferring with local manufacturers. Mr. Homs recently returned from a mission in South Africa, Australia, and New Zealand, where he investigated the markets for agricultural machinery.

MORE GOVERNMENT ORDERS FOR WIRE NAILS GIVEN OUT.

The Sub-Committee of the Iron and Steel Institute, having jurisdiction over wire products, has just distributed additional orders for 25,000 kegs of wire nails among manufacturers on Government account. Between 15,000 and 20,000 kegs are for construction of the National Guard Army Cantonments. The American Steel & Wire Company will furnish half of the nails ordered. It is estimated that each of the cantonments will require from 1,000 to 1,200 kegs each, and there are 16 cantonments. The War Department has also placed contracts for several thousand kegs of wire nails for auxiliary camps along the lakes. The latter order went directly to the largest interest.

HARDWARE RETAILERS TO HOLD NEXT NATIONAL CONVENTION AT CEDAR POINT, OHIO.

Cedar Point, Ohio, a summer resort a few miles from Sandusky, has been selected as the place for the 1918 convention of the National Retail Hardware Association. The town is easily accessible by rail or water, and hotel accommodations are said to be ample and satisfactory. It is planned to hold the meeting just prior to the opening of the regular season, which is generally about the first of July.

FALLS RIVET COMPANY TAKES OVER PLANT AND BUSINESS OF KENT MACHINE COMPANY.

The Falls Rivet Company of Kent, Ohio, has taken over entirely the plant and business of the Kent Machine Company, which is also located at Kent. For the past ten years the Kent Machine Company has built and marketed concrete mixers, and this line will be continued and other products added from time to time. The business will be operated separately and the name of the Company will be retained. Extensions and improvements are being made to their already well-equipped foundry and machine shop.

In the reorganization of the business, the following officers were elected: M. G. Garrison, president; W. S. Kent, vice-president; Roy H. Smith, treasurer; and Myles E. Ewing, secretary. Mr. Ewing was formerly salesmanager of the Kirk-Latty Manufacturing Company of Cleveland.

CHICAGO ORDINANCES ENFORCE USE OF WINDOW AND DOOR SCREENS TO KEEP OUT FLIES.

Chicago now has two long-delayed and much-needed ordinances which were recently added to its code of health laws. They are known as the new Fly Screening Ordinances. The first specifies that owners of buildings in which people are domiciled must equip all openings to external air with adequate screens to prevent the ingress of flies. The other states that stables or barns for the housing of horses or other animals must also have screens or other means to keep out flies. The enactment of these ordinances means a boost for the window and door

screen business in Chicago, and it would be profitable for hardware dealers in Chicago and other cities where similar laws are in effect, to advertise their stock of window and door screens and their readiness to meet the people's needs.

WASHING MACHINE MANUFACTURERS MEET AT CHICAGO.

The American Washing Machine Manufacturers Association held another meeting at the Hotel Sherman, Chicago, on Wednesday and Thursday, July 25th and 26th. A previous session had been held in Chicago late in June, and this meeting was for the purpose of completing the work then undertaken and studying new factors affecting the washing machine industry.

A prominent feature was the address of Clark Washburn, Manager of the Credit Department of the Federal Reserve Bank at Chicago, on the subject of "Trade Acceptances." The Federal Reserve Banks and many of the largest business interests of the country are making efforts to have the trade acceptances put into general use, and the members of the American Machine Manufacturers Association have all signified their willingness of employing this method of accounts. Another interesting address was that of R. D. Hunt of the Dexter Manufacturing Company, Fairfield, Iowa, on the subject of costs.

Many other timely and pertinent matters also came up for discussion. The relations between the Government and business were considered, and much attention was given to the important questions of raw material and labor. The War Revenue Bill was another topic, and the members were naturally also deeply concerned in the matter of transportation and car shortages, also in the reports of scarcity of lumber. The Publicity Committee told of its activities and stated that a complete report would be forthcoming at the next meeting of the Association, which will take place September 12th and 13th at Chicago. Sam T. White of Davenport, Iowa, is president of the Association, and Raymond Marsh, of Chicago, is secretary.

GOVERNMENT WANTS INSPECTORS OF HARDWARE AND METAL LINES.

Secretary-Treasurer F. D. Mitchell of the American Hardware Manufacturers' Association has sent a letter to the members of the Association, advising them that the Government is in need of the services of young, educated, energetic men in the capacity of Inspectors of Hardware and Metal Lines. Such service requires a degree of technical knowledge and a habit of thoroughness above the average, but the compensation which the Government is willing to pay is adequate for this ability. Hardware manufacturers who know of any young men possessing these qualifications are urged to promptly advise Secretary-Treasurer Mitchell, 4106 Woolworth Building, New York City, giving full particulars. This is one of the services which the members of the Association can do in the interest of helpfulness to the Government.

"DEACON" SALISBURY EXPLAINS HOW FIREARMS LEGISLATION WAS DEFEATED.

At a little dinner party recently tendered by Iver Johnson's Arms and Cycle Works to their salesmen, at Fitchburg, Massachusetts, "Deacon" Salisbury, one of the old representatives of the company, was called upon to tell in detail his experiences and methods of so successfully fighting firearms legislation in the western states, notably Missouri. After his talk, which was of considerable length, Frank I. Clark, another representative who has been doing similar work in regards to firearms legislation in the East and South, jokingly asked him when he was going to give the story. The "Deacon's" answer was a novel letter to Mr. Clark, which was essentially an alphabetic arrangement or an acrostic, as follows:

In speaking of my narrative of yesterday about legislation you said I only told what was done, not how it was done, so I will tell you. I will admit it was a very incomplete narrative, but to tell it rightly, it would take an hour at least for each job, which of course was out of the question.

The bills were defeated in each and every state by:

Ability
Bluff
Ceaseless endeavor, Courage
Determination
Executive ability
Firmness
Good judgment
Hope
Indefatigableness
Johnson backing the job up
Kindness
Long on popularity
More popularity
No backing out, Never say die
Open to suggestions
Patience, double distilled
Quickness
Resolve to win at any cost
Smoothness
Take no man's word
Unity in purpose
Victory, **sure** of it
Waking up some dead ones
X unknown quantity claiming all the credit
Youthful appearance
Zenith, which means the height of perfection.

After all this, of course, we win easily. In short, using all the qualities which bring success in any undertaking, and which if I had known I possessed them sooner, I would not have stopped short of the job of the President of the United States.

EDWARD N. HURLEY NEW CHIEF OF SHIPPING BOARD.

To succeed William Denman as chairman of the United States Shipping Board, President Wilson has appointed Edward N. Hurley of Chicago, former chairman of the Federal Trade Commission. Mr. Hurley had thrice before been honored with important government assignments and is now preparing to give up the work recently undertaken as chairman of the Exports Council Advisory Board. His splendid record in trade and industry show him to be well qualified for the post. He had long been an advocate of an enormous merchant marine for the United States and now he has been assigned to build it.

MISSISSIPPI AND LOUISIANA DEALERS DISCUSS WASTE IN HARDWARE BUSINESS.

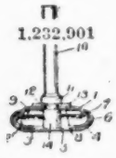
One of the important subjects discussed at the convention of the Mississippi and Louisiana Retail Hardware Associations on Tuesday and Wednesday, July 18th and 19th, in New Orleans, was the question of "Waste in the hardware business." This was taken up at the Wednesday morning session, and Hamp Williams of Hot Springs, Arkansas, who delivered a stirring talk on advertising the day previous, was the leading speaker on the topic. Former Senator Williams gave a pointed and informative address on the subject of "Waste in the hardware business," urging that the hardware man should look out for the interests of the farmer. He cited the fact that many thousand head of hogs die annually from cholera, and he claimed that farmers do not vaccinate hogs because of the lack of serum, and the high cost of it when it is available. He told how his company ordered large quantities of hog cholera serum and disposed of it to the farmers at actual cost. In this way the farmer's waste in the hog end of his farm was checked; the farmer became the friend of the hardware man, and with his extra money bought more hardware from the man who had been his friend.

The question of the mail order house and its inroads in the retail merchant's business was handled without gloves. No definite action was taken, but it was made clear that the hardware man must enter the mail order business for himself, and by the use of the telephone and free delivery put the things the farmer needs at his door in the least possible time.

All attending the convention agreed that it was the most successful and helpful ever held. At the election of officers of the Mississippi association on Wednesday afternoon, B. D. Avery, of Crystal Springs, was elected president; George G. Baird, of Inverness, first vice-president, and A. E. Swenney, of Lexington, second vice-president. The directors named were: Curtis Morgan, Columbia; D. E. Porter, Oxford; P. E. Pegues, Winona, and W. J. Holt, Indianola. The Louisiana officers are holdovers and there was no change in their list.

PATENTS SLIDING CASTER.

Daniel B. Diss, Newark, New Jersey, assignor to the Universal Caster and Foundry Company, Newark, New Jersey, has procured United States patent rights, under number 1,232,901, for a sliding caster described herewith:



A sliding caster, comprising bottom and top pressed metal shells, the bottom shell having a smooth sliding bearing surface and an upwardly and outwardly arched edge portion, the top shell having a central disk-shaped portion, a downwardly-sloping annular shoulder extending about the same, and a downwardly and outwardly arched edge portion beyond said shoulder, the bottom shell being spun on the top shell with its arched edge portion closely fitting around the arched edge portion of the top shell and its peripheral edge abutting said shoulder, and a stem extending through said upper shell, having an enlargement above the surface of the upper shell and an upset end extending between the inner surfaces of the upper and lower shells, and adapted to support the center of said lower shell, substantially as set forth.

SHIPPING SITUATION AFFECTS FOREIGN TRADE OF HARDWARE MANUFACTURERS.

The shipping situation to most foreign countries is now in so serious a condition that Edward J. Jackson, Chairman of the Export Committee of the American Hardware Manufacturers' Association, is urging the members of the Association to approve having their Committee on Governmental Activities take up this subject with the United States Shipping Board.

Many of the hardware manufacturers, after years of endeavor and hard work, have established an important foreign trade which at present is handicapped and threatened by the exorbitant rates demanded by shipping companies.

It is of paramount importance that this business be held and still further developed, and this, says Mr. Jackson in a letter to the members, can best be done by urging our Government to apportion to the commercial interests a reasonable amount of available tonnage at a fair rate.

The Export Committee of the Association in no way wishes to make unreasonable requests upon the Government, as all the members are, of course, desirous of bringing the war to a successful and early conclusion, but it believes that now is the time to present the views of the members of the Association in a concrete form.

BOOKLETS ON CARE OF SAWS FOR DISTRIBUTION TO CARPENTERS.

E. C. Atkins and Company, Indianapolis, Indiana, manufacturers of the Silver Steel Saws, have issued an interesting and helpful booklet on "The Care of the Saw." It is certain to prove decidedly valuable to carpenters and others using saws, and hardware dealers can obtain as many as they can distribute profitably, each booklet to bear the dealer's name and address. The rule is to send a copy to the dealer for each carpenter's name that he sends in. The dealer gives out the booklet, and then the company makes a further distribution of other booklets and literature to the man whose name has been received, each time calling attention to the dealer's store. In this way the company have been able to give hardware retailers some strong cooperation.

The booklet, "The Care of the Saw," contains sixteen pages, the introduction pointing out that the first thing of importance is to buy good saws, and the second is to take care of them. The chapters are devoted to "Hand Saws—How to Select"; "Cross-Cut Saws"; "Buck Saws"; "How to Select"; "Cross-Cut "How to File a Cross-Cut Saw"; "How to File Wood Saws"; and "How to Care for Saws," the text matter being supplemented by suitable sketches and followed by illustrations and descriptions of the various Atkins saws. Dealers can obtain full particulars and copies of the booklet by addressing E. C. Atkins & Company, Indianapolis, Indiana.

A good, reasonable advertisement that talks straight to the point is a mighty close second to a real two-legged, clear-headed salesman.

EXHIBITS IN AMERICAN ARTISAN WINDOW DISPLAY CONTEST

PRETTY EFFECT IN WINDOW DISPLAY OF PLATED WARE.

"The Housewife's Delight" is what Bernard L. Grayson of the M. H. Lazarus Company, Charleston, South Carolina, names the handsome window display of Plated Ware illustrated herewith, which was awarded Honorable Mention in AMERICAN ARTISAN AND HARDWARE RECORD Window Display Competition.

Window Display of Plated Ware Awarded Honorable Mention in AMERICAN ARTISAN AND HARDWARE RECORD Window Display Competition. Arranged by Bernard L. Grayson for the M. H. Lazarus Company, Charleston, South Carolina.

As can be seen in the illustration, the window is of a rather odd shape, and prior to this display, it was trimmed with garden supplies. For the exhibit of plated ware it was entirely remodeled and the whole background was replaced with mahogany pilasters and full length beveled edge mirrors.

"At the top, over the shelf," says Mr. Grayson in describing his arrangement, "I have prism lights. This mahogany background, with a flat white ceiling gives a most beautiful effect, and almost anything placed in the window is bound to attract attention.

"In this particular setting I used the following articles: Japanese trays, glass tray, thermos bottles, coffee percolators, nickel plated tea pots, hot water plates, coffee machines, casseroles, chafing dishes, table knives, and carving sets.

"I covered the floor and wooden stands with a dark green-figured covering, and then arranged my goods as shown in picture.

"This window took second prize in a Window Lighting Contest. The man who took first prize was in the electrical business.

"This window attracted more attention than any that I have ever arranged. It also sold a great quantity of goods.

"You will notice I have used nothing but the goods themselves to trim the window.

"I don't believe a great deal in show cards, etc., unless it is to introduce some new article."

Plated ware always lends itself readily to an attractive display because of its bright, glistening surface, and in this instance, the beauty of the exhibit was enhanced by the mirrored background and the dark green covering on the floor and pedestals. Each percolator, chafing dish, casserole or similar item is a little display all in itself and hence it takes but few items, neatly arranged, to compose a very attractive display.

THE WHEREFORE OF HIGH PRICES ON AMMUNITION AND OTHER ITEMS.

In the following article, E. I. du Pont de Nemours & Company, Wilmington, Delaware, give an explanation of the present high cost of ammunition, which also explains in a way the high prices in other lines, such as tools, cutlery, housefurnishings, etc.:

Explanation of High Cost of Sports.

For sometime we have heard cries of the high cost of living, which includes amusements and sports. Everybody blames the other fellow for conditions. For instance, some trapshooters and hunters put the high cost of ammunition on the powder companies' shoulders.

An investigation proves such attitude erroneous. We will take the Du Pont Company for example. It being the foremost manufacturer of sporting powders in the country, and having spent hundreds of thousands of dollars to popularize its powder for trap and field shooting, will be conceded to have some idea of the situation generally, and is naturally interested in how present conditions will affect trapshooting, especially insofar as the average man is concerned.

So far as the Du Pont Company is concerned, up to January 1, 1917, every pound of smokeless powder sold for use in shotgun ammunition was sold at the same price that was in effect prior to the great European War. While it is true that the manufacturing costs on smokeless powders for domestic consumption have increased, because raw materials have increased and labor is high, this increase was absorbed by the company in the nature of a contribution to the sport of trap and field shooting with the idea of keeping the cost to the sportsman as low as possible.

In every walk of life, in normal as well as abnormal times, we see merchants and manufacturers pushing this or that commodity in preference to the rest of his line, because through some advantage he possesses it has cost him less and by selling a large quantity of it he is able to increase his gross profits. This applies to hardware, clothing, groceries, etc. These merchants and manufacturers are not considered pirates because they take advantage of these exceptional opportunities which come their way once in a while. And knowing, as everyone knows, of the increased cost of brass, copper, spelter, wads, shot, fulminate, which ranges from 50 percent to 500 percent, and of the almost prohibitive price of paper, (even though powder had not advanced,) we could not reasonably expect anything but stiff increases in the price of ammunition. There is no secret about these increased prices. Each may investigate for himself, and we venture to say the average net profit to the manufacturer of ammunition for domestic consumption as compared with his "before the war" net profit, will be found to be no higher in proportion to the increased cost of production than will the profits in any other line.

It is generally conceded that we are shooters by instinct, and that love of firearms is a heritage transmitted from generation to generation. However, the son of the average man cannot expect to indulge in any great amount of trapshooting before he is earning his own money to spend on the sport, especially if the father is also a trapshooter, as the average man's income does not permit two or more persons in his family to be trapshooters, even with shells at 50 or 60 cents a box.

We do not question the fact that some men are going to find it difficult to keep up their trapshooting, in view of the increased expense. We have all of us experienced periods when we found it necessary to forego some great personal pleasure because of the cost, which was beyond our means, and what did we do? We did not forever foreswear that pleasure, but put off the day of realization until our means permitted us to indulge ourselves. It is not what may be termed an acute hardship for these men to have to forego their occasional visits to the traps because of the increased cost of ammunition. When their wages or salaries increase, or ammunition decreases in price, they can again take up the sport without losing any of their self-respect.

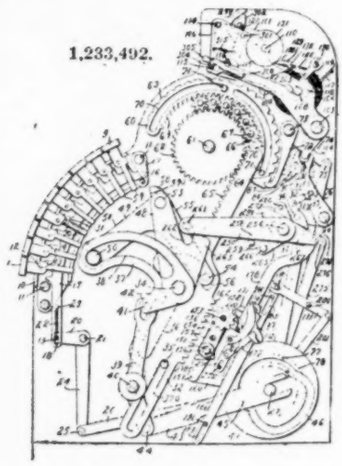
Does anyone think for one minute that baseball would be killed forever with the great American public if our supply of baseballs were shut off for two, three, or more years, because of abnormal conditions? Certainly not; and yet baseball has not been bred into us nearly so long or so thoroughly as has shooting.

In normal times the ammunition business is not one of abnormal profits for dealer, jobber or manufacturer. It is, however, a business that runs into an enormous amount of money. To suggest to the manufacturers of shells that they sell their product for domestic consumption "at cost or even at a loss" is most unreasonable, and would mean that for years the net profit of their stockholders on this staple commodity would be eliminated, and in case the readjustment period was long delayed or never came the manufacturer would be "up against it"; in fact, doubtless forced to the wall by reason of their poor business policy. Sound business logic dictates that in times of plenty we must reap the harvest to fortify us against the lean years occasionally experienced, and this applies to the manufacturer of ammunition.

When the period of readjustment comes, if it ever does, it is to be expected that prices all along the line will be readjusted, and yet noted authorities on the subject tell us we can never expect material reductions in the cost of living or luxury—that the tendency is now and in the future will ever be upward, except in times of panic, and that the sooner we adjust our ideas and ideals to present conditions and prepare for the future on this basis the more contented we will be.

PATENTS CASH REGISTER.

Haakon A. Martin, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio, has obtained United States patent rights, under number 1,233, 492 for a cash register, which is described herewith:



In a machine of the class described, the combination of a plurality of record strip carrying frames; differentially adjustable printing mechanism including a plurality of sets of type carriers corresponding in number to the record strip frames; actuating mechanism for moving the record strip frames to carry their record strips against their type carriers to take impressions therefrom; means for selectively connecting the record strip frames with their actuating mechanism; and means for feeding the record strip carried against its type carriers.

TEN BUSINESS MAXIMS.

1. Keep human; business depends on the human equation.
2. Courtesy is the first law of business.
3. The knowledge of a woman's name is the open sesame to her confidence.
4. Don't expect interest if you are not ready to show it.
5. Artistic display of goods is half the sale.
6. Every dollar invested in a good clerk will return a hundred-fold.
7. A good location is money in the bank.
8. Variety is the spice of shopping.
9. Price, style and quality are all greatly to be cherished, but the greatest of these is style.
10. It is not always the butterfly who buys the most goods.

TRADE PRESS IS AS NORTHERN STAR WAS TO THE PILGRIMS.

The following extracts are taken from an address recently delivered by Leon M. Hattenbach, Chairman of the Trade Bulletin Committee of the National Association of Retail Grocers, at their convention held recently in Toledo. Mr. Hattenbach is also the publisher of a trade paper in Colorado and fully conversant with his subject. His remarks anent the value of the trade paper to the merchant in any line are of particular interest:

"I have had the opportunity of coming into very close contact with everything having to do with the trade press connection with our merchandise problems, and I can now conscientiously and honestly say that the trade press is to merchandising and commodity distribution as the beacon light which shines out through the night guiding the mariner upon the safe course, which enables him with absolute surety to escape the shoals which beset his course. I can safely say that the trade press is as the Northern Star was to the pilgrims.

"Gentlemen of this convention, the trade press is of such great importance to you and to every man connected with the distribution of commodities from producer to consumer, that I honestly believe that the trade paper is entitled to first and foremost consideration in every business house in this land. The trade press is the educator, the guide, the friend in need, the bulletin, the advisor, the inspiration. There is not a business man in this country who is faithful to the trade press who cannot, if he honestly desires to do so, testify conclusively that the trade paper has brought him more benefits, comparatively speaking, than any investment he has in his business.

"Very few of the trade papers are financially successful, yet they continue year after year and year after year, struggling along, working day and night to gather for you information, advice and experiences from the four quarters of the globe. There is not a trade paper published, no matter how poor it may be, that is not worth one hundred times as much as its subscription price; and the real meritorious papers, the ones which stand at the head of all trade journalism, are worth so much to you that their value cannot be estimated.

"Our best merchants throughout the country subscribe to trade papers. There are retailers who take as many as ten trade papers and invariably such men are successful business men and never failures.

"Because of the necessity for scientific merchandising and the perpetuation of our present method of commodity distribution, it is an absolute necessity that manufacturers, wholesalers and retailers co-operate and work harmoniously together, one for the other and all for the one. Unless they do so they cannot survive. The encroachment of the chain stores, the mail order houses, the immense department stores and the other quantity buying institutions, is becoming so powerful and widespread that unless these various factors do co-operate a large percentage of all of them will be cast into the abyss of commercial oblivion.

"The trade press is your great champion in this crisis. The trade press is fighting your battles for you. The trade papers are spreading enlightenment and information. The trade papers are telling you and your fellow merchants just exactly what is being done by these quantity buying powers which are usurping your rights. The trade papers are supporting and becoming sponsor for legislative reforms to protect you against this encroachment. Every reform which has been advocated by your national and local association during the past few years has originated and has been championed and has been fought for by the trade press, and without the trade press you would have been years behind in your progressive battles to maintain your rights. Where do you suppose you would be today with price maintenance legislation, with anti-gift enterprise legislation, with favorable credit legislation, and with a hundred and one other legislative problems, were it not for the wonderful fight which has been put up for you by your trade papers?

"It is certainly a duty that you owe to yourself, to your fellow merchants, to your organizations, to your American citizenship, to support those who are supporting you, to stand back of those who are fighting for you. You cannot do this alone by subscribing to the trade paper, nor by securing a number of subscriptions for a trade paper. There is no trade paper in existence which can live because of a large subscription list alone. Trade papers must have advertising, and advertising for trade papers can come only from manufacturers and jobbers. Therefore, it is incumbent upon you to furnish the ammunition, the motive power, by which manufacturers and wholesalers can be convinced that it is to their direct benefit to patronize the trade papers, to advertise in them and thus to give them sustenance.

"A great many of our leading manufacturers and wholesalers are fully cognizant of this fact. A great many of our leading manufacturers and wholesalers are true blue and are loyal to the trade press, which means that they are loyal to you for whom the trade press stands. Without exception such manufacturers and jobbers are successful. The broad minds of these manufacturing institutions, wise in their day, loyal in their hearts, unsolicited patronize the trade papers and thus make it possible for you to have at your command the great power which is represented by the trade papers."

COMING CONVENTIONS.

Tennessee Retail Hardware Association Convention, Chattanooga, August 7, 8, 9, 1917. Walter Harlan, Secretary, 44 Boulevard Circle, Atlanta, Georgia.

Oklahoma Retail Hardware Association, McAlester, September 5, 6, 1917. W. B. Porch, Secretary, Oklahoma City.

National Association of Automobile Accessory Jobbers, French Lick Springs, Indiana, September 10, 11, 12, 13, 14, 1917. William M. Webster, Commissioner, Chicago.

American Washing Machine Manufacturers' Association, September 12 and 13, at Hotel Sherman, Chicago. Raymond Marsh, Otis Building, Chicago, Secretary.

Kentucky Hardware and Implement Dealers' Association, Louisville, Kentucky, November 13, 14, 15, 16, 1917. J. M. Stone, Secretary, Sturgis.

Ohio Hardware Association, Columbus, February 19, 20, 21, 22, 23, 1918. James B. Carson, Secretary, Dayton.

EARLY HARDWARE EXPERIENCES

By E. C. Simmons, Chairman Board of Directors, Simmons Hardware Company.

E. C. Simmons, chairman of the Board of Directors, Simmons Hardware Company, St. Louis, has had about as varied experience in the hardware business as any man, having been a salesman, retailer, wholesaler and manufacturer. Even before the Civil War he had been active in the sale of hardware and his long and varied experience stamps him as an authority on problems confronting the man in the business today. It was only natural, therefore, that at the recent convention of the National Retail Hardware Association in St. Louis, his talk on "Early Hardware Experiences" was given a very attentive ear, especially as in recounting the occurrences he took occasion to emphasize some of the essentials of success for the retail hardware dealer:

EARLY HARDWARE EXPERIENCES.

On September 21, 1839, a young fellow came into Frederick, Maryland. He was a stranger and was entirely devoid of clothing, but they did not throw him out, because he weighed only nine pounds. That young man has been invited to address you to-day, and I noticed that when your president invited me to speak he also added, in a most pleasing tone of voice, "You need not speak more than five or ten minutes"—which I took to be a hint that I must not talk too long.

In a case like this I feel a good deal like the colored brother. A gentleman met him on the street and said to him, "Why, Zeke, I did not know you were a preacher." He said, "I am not a preacher." "Why, didn't I see you in the pulpit last Sunday?" "Oh, yes, sah; I was in the pulpit, but I am not a preacher—I am only an exhorter." "Well, Zeke, what's the difference between a preacher and an exhorter?" "Well, the preacher he haf to stick to the text, but the exhorter, he can ramble around."

Now, my friends, I propose to "ramble around." There are so many things to talk about at the present time—so many that are intensely interesting—so many upon which perhaps your minds are more or less concentrated, it is rather a difficult problem for me to know just what subjects to talk on. I could easily tell you what I think in regard to further advances in prices; also as to what is going to happen after the war, as related to the prices of the goods that we all sell. I might perhaps tell you how to raise boys, as I have had some success in that line—or at least I think I have. I might tell you what most assists longevity or prolongs life in the way of scientific and intelligent eating; but it has occurred to me that perhaps you would like to hear some little about my personal experiences since I first commenced the hardware business—nearly sixty-two years ago. Therefore, while I know it is in bad form to use the personal note in an address like this, I ask you to excuse it on the ground that it is only used because it may be more interesting to you, or quite as much so as other topics.

Wanted to Be a Salesman.

Quite early in life I imbibed the idea that I was cut out for a salesman—which I regard as the most important duty in the contact with business. While I was quite a lad—not more than twenty years of age, and being devoid of hair on my face, I looked younger than I really was—I went to Mr. Leavering, my employer, and asked to be made a salesman. His reply was brief and to the point. He said: "Tut, tut, wait four or five years for that yet. You are not old enough." I knew him so thoroughly that I felt it would be a mistake to discuss the question any further. About two months later I said to him: "Mr. Leavering, I should like to carry the store key instead of the porter carrying it." He said: "What do you want to carry the store key for?" "I want to do more work than I am paid for. I want to do more work than anybody else. I want to get down earlier than he does." He said: "What time does the porter get down?" I replied: "Seven o'clock." He said: "What time do you want to get down?" "Six-thirty," I said. He said, "All right, if you feel that way about it, you can carry the key"—and he so ordered it. The lock on this door was an old English lock, wrought iron, and the key was fully 8 inches long and very thick and heavy. It was necessary to have a sole-leather case made for it to keep it from wearing out my pockets. The reasons for my wanting to carry the key were as follows:

In those days there were no railroads west of the Mississippi River. The merchants visited St. Louis twice a year to make their purchases. Traveling salesmen were entirely unknown or unthought of. These merchants would come by boat. Usually they would arrive at night and go to the hotels—all four of which were situated within two or three blocks of our store. The earliest breakfast hour was 7:30. I figured that these men would be awakened by the noise in the streets—the drays running over the rough boulders—and being in a strange place would be unable to sleep late and would get up long before breakfast—would go wandering around, and perhaps I could meet some of them and sell them something before they had had their breakfast.

First Customer.

The first morning that I carried the key I was down bright and early and on the lookout for merchants. Pretty soon one came along, or a man who at least looked like a merchant. He stopped when he saw a golden anvil over our door and a pile of grindstones by the downspout. I approached him, said "Good morning," and he replied in a pleasant way. We got to talking. I told him my story, and said I had a dear old mother to support, had very little to do it on and I was anxious to become a salesman. In other words, I put the plain, simple facts before him as modestly as I could. I asked him what his business was, and he said he was a merchant in Rolla, Missouri. In a little while he said: "Why, I have a little 'jag' of hardware to buy and I will just buy it from you, young fellow, to give you a little encouragement. My name is Joseph Campbell of Rolla, Missouri." He came in and I sold him a nice bill. That was my inspiration—that encouragement which he gave me did me more good than any other one thing that I remember in my business career. I felt stronger; I felt more confidence in myself; I was more self-reliant. Mr. Campbell remained my fast friend for more than twenty-five years, buying every dollar's worth of goods in our line from me, paying cash for them, and never permitting anybody else to wait on him.

Do More Than You're Paid For.

There is a pretty good lesson in this, I think, for boys of the present, particularly that feature that I wanted to do more than I got paid for, and here let me make a plea for the boys in your store. I wonder whether you are teaching them as you should. I believe it is a moral obligation on your part to teach the boys you employ as much as you possibly can about the business—all about the goods, why this item is better than that, why this thing is perfectly good and cannot be excelled in quality, just how to talk to the customers to make them welcome and make them feel at home. My observation leads me to believe that things of this kind are too much neglected, and I think it would be a good investment if more attention was given to this subject. It seems to me as though the merchant who employs a boy when he is quite a youngster—when he is still very much of a boy—always remembers him as a boy, no matter if he reaches the age of thirty or thirty-five years—he is still a boy to that man. He treats him too much as a boy, instead of a grown man, and perhaps does not compensate him quite as much as he would if he had never employed him until he reached the age of manhood.

Encouragement Is Inspiration.

A little encouragement in the way of higher compensation, properly done, would oftentimes be an inspiration. Therefore, if you could find a $25 or $50 note to give to some faithful clerk on January 1—one who has improved during the past year, who is showing great interest in the business and making himself more valuable, it would be money wisely expended, and perhaps would have a greater influence than if you advanced his wages $5 a month, which would make $60 a year; whereas, giving him $50 in one lump would impress him as a very large sum of money.

A Civil War Experience.

Among my experiences during the time of the Civil War was a trip to Cincinnati, which came about in this way: When the war first broke out we were all "shocked"—business was flat and dull, and we would have been willing to sell most anything we had at less than cost. Inside of three or four months we realized that not 5 per cent of the people of the United States were engaged actively in the war. Previous to that time we had been importing our goods largely, and that importation ceased. The goods became very scarce, but one house in Cincinnati, which was very rich, had realized

the situation, sent eight of their buyers to the factories and had them stand over the production every day and ship the goods out to them, so that they had an enormous stock. I gathered up $25,000, went over there and invested it in goods at high prices, shipped them over to St. Louis, with my own shipping tags on them, so that people would not know where they came from. My large St. Louis competitors, Shapleigh & Company and Child, Pratt & Fox, were very short of these goods; in fact, entirely out, and they were very glad indeed to buy them from us. They wondered where we got them; therefore we sold them out very soon at excellent profits. Among that first lot of goods were 100 dozen cotton cards, made in Worcester, Massachusetts. I paid $3 a dozen for those in Cincinnati—I had formerly been buying them at $2 a dozen. I sold them at $5 a dozen, and sold them almost immediately, as cotton cards were in great demand in the South. In less than three weeks I gathered together $50,000, went back to Cincinnati and repeated that experience, shipping over another hundred dozen cotton cards. This time they charged me $4 a dozen for them, but I sold them quickly at $6 a dozen, and from that day to this I blame myself for not having asked $6 a dozen for the first lot. That was an exceedingly valuable lesson to me and has lasted through these many years, i. e., that I should get what goods are worth.

I have been fortunate in having quite a varied experience. I have been a retailer, doing probably the largest retail hardware business ever done in the United States; a wholesaler, as you know, and, in a limited way, a manufacturer, as we have hundreds of thousands of dollars now invested in factories in which we own the controlling interest. This varied experience perhaps has ripened my judgment to some extent, and I have found it very valuable to the Simmons Hardware Company during this unusual period of business conditions brought about by the war. I thoroughly believe that present prices have come to stay for some time or that there will be still higher prices. I expect there will be a good many advances between now and January 1 and that there will be no declines.

Good Methods of Accounting.

I call the attention of the gentlemen here to the necessity of having good methods of accounting, so as to know their business and know exactly what they have—know just what they have made and, if they have not done well, to find out just why they have not.

I particularly advise you all not to abuse the cash discount matter. If you want to pay your bills and get 2 per cent off in ten days, you should always pay them in ten days, and not take twelve or fifteen days and then expect to get your cash discount, because that is not the agreement. If I had my way about it, I would rather nobody who buys goods of us would discount their bills, providing they paid promptly at the end of sixty days, because 2 per cent off in ten days is equivalent to loaning money, or rather paying interest at the rate of 14 per cent per annum. I think that any man who does not discount his bills at the present time and does not take advantage of this 14 per cent, is not doing a successful business and is in danger, financially speaking. Referring to our house, we have always discounted every bill that was discountable in ten days, since the business was incorporated January 1, 1874.

Avoid Price Cutting.

I strongly recommend that you avoid price cutting; be friendly with your competitors and cultivate their good will. Don't start a price-cutting game—it is very unsatisfactory and almost invariably unprofitable; in other words, I consider it bad business. Good salesmanship consists in making friends, the ability to make friends. It is a very justifiable ambition to try to make people like you, if you do it in a dignified way. I have followed that course all my life and I am still using every laudable effort and adopting every worthy method that is dignified and straightforward to increase the number of friends I have among the hardware dealers of the United States, because I feel a sense of gratitude to the retail hardware merchants that I can never repay. I am indebted to them for the success of my business life. They have been patrons and good friends of mine for more than half a century, and therefore I am now remaining somewhat active in the business with the honest and faithful intention of putting more good into it than I take out of it for the rest of my life.

While advocating that you should refrain from cutting prices, I do not mean by that to go to the other extreme and have agreements with your competitors for fixing prices which are supposed to be regulated by competition. We do not believe that is good business. Our house has never had an agreement with any other house for the regulation of prices.

Meeting Catalog House Competition.

A great deal has been said about catalog house competition, but I think the most effective way in the world to meet that and to kill it is the effort to be made by the retail dealer right in his own home and his own store. The jobber or manufacturer cannot do anything with it at all, but the retailer can if he pleases. I have in mind one case where a good merchant and his wife have shown their ability to make friends and to interest people—to be agreeable to them and to mix with them, and they have cured all the catalog house buying. It is not hard to do when you once get your plans well laid and simply have a good vehicle to go around in.

I wish I had time to tell you about the war. I keep as well posted on that as I possibly can. The next question is, how long will it last? I do not think anybody knows, but if you will turn to the Bible and read the book of Revelations, thirteenth chapter, or the book of Deuteronomy, twenty-eighth chapter, you will get from those some very valuable information; and as I construe the wording of the thirteenth chapter of the book of Revelations and if that applies to this war—which a great many people think it does—it means to say that this war will cease about February 1, 1918. Please don't understand that I indorse that idea or that I believe in it. I do not; I simply call attention to it because there are a great many people who do believe in it.

Salesmanship a Great Profession.

Another word as regards salesmanship, because I believe that is the most important thing connected with the hardware business. Salesmanship is a great profession, and I use the word "profession" in the strict sense of the term. The slogan of the best salesman is "enthusiasm." Enthusiasm is the zeal that puts zero in competition. Cash can buy goods at any time, but it takes enthusiasm to sell them in a large way. One result getter, one optimist, one enthusiastic "live wire" can do more to "ginger up" an organization than any other influence that I can think of. Enthusiasm is the earnestness of purpose and eagerness to occupy the front seat. Life is one continued strife or battle. Competition is always alert and never sleeps. It's the wise salesman who studies his work, who plans his work and works his plans.

I believe that a man is a success as a salesman in proportion to the amount of work, study and enthusiastic effort that he puts into his business, which always must be coupled with integrity of purpose and deed. I have never known a man who possessed these qualities to fail in whatever he started out to do. Men who are making good as salesmen to-day are men who do things that keep them in the proper mental attitude to sell. The mind has a vast amount to do with the body. If the mind is clear, healthy and free from stains, it is a great contributor to physical effort and helps wonderfully in producing success.

Before closing this address, let me say—and I ask you again to excuse the personal note—that I have been marvelously blessed by having three sons who are good men; very good men, indeed, with no bad habits. They are also unusually fine merchants—absolutely fair, and possessed of the most rock-ribbed integrity and fidelity to truth and honesty. When these children came to us, I made up my mind to try my best never to do anything I would not want to see them do, so that they have been an inspiration and support to me in that endeavor. They have been managing the business for the last eighteen years. I have had nothing whatever to do with the active management of the business. I simply stay around as a helper, and—in a certain sense—make it a "plaything." I know of no better way to give you a proper insight into my ideas in regard to those sons than to recite to you Whittier's beautiful poem called

"The Bridge Builder."

An old man going a lonely way,
Came in the evening, dark and gray,
To a chasm vast and deep and wide.

The old man crossed in the twilight dim,
The sullen stream had no fear for him,
But he turned when safe on the other side
And built a bridge to span the tide.

Said a fellow pilgrim, standing near,
"You are wasting your time in building here.
Your life will end with the close of the day,
You never again will pass this way.

You've crossed the chasm, deep and wide,
Why build you this bridge to stem the tide?"

The builder lifted his old gray head,
And turning to his friend he said,
"There follow after me to-day,
Three youths whose footsteps pass this way.

This chasm which was as naught to me,
To those good youths may a pitfall be.
They may not be able the tide to stem,
Good friend, I have builded this bridge for them."

Are you hoarding your money or are you a good patriot, keeping it in circulation and helping business? If business should take a turn for the bad it will be because people are not spending the money they should.

OHIO HARDWARE ASSOCIATION TO MEET FEBRUARY 19 TO 23 AT COLUMBUS.

At a recent meeting of the directors of the Ohio Hardware Association at the Deschler Hotel, Columbus, Ohio, it was decided to hold the 1918 Convention at Columbus, February 19th to 23d inclusive, with headquarters at the Deschler Hotel. Those attending the meeting were: Homer P. Smith, president; C. C. Hiller, vice-president; James B. Carson, secretary; A. G. Wertz, treasurer, and the following additional directors: John G. Getz, James H. Goldcamp, Charles Lammers, A. H. Pierce, C. B. White, Frank Massy and M. C. McGrath.

FRANK A. BARE NOW PRESIDENT OF GEORGE TRITCH HARDWARE COMPANY.

In the reorganization of the George Tritch Hardware Company, Denver, Colorado, one of the oldest mercantile firms in the West, Frank A. Bare was elected president; Albert Arps, vice-president, and H. J. Thomas, secretary-treasurer. Mr. Bare was until recently western manager of the Ohio Varnish Company and prior to that was in the retail hardware business at Mansfield, Ohio. Aside from his extensive acquaintance in the West, he is well known in the East because of his splendid work as secretary of the Ohio Hardware Association.

NEW YORK RETAILERS TO HAVE NEW CREDIT BASIS.

The retail merchants of New York have formed a Credit Association which bids fair to give a square deal to everybody, says a recent issue of *Advertising News*. The people who have plenty of money but pay their bills when they please, disregarding all rules, are to be put on the same basis as others who are forced to walk up to the cashier's desk every month and settle.

Furthermore, credit is to be extended to people who deserve it, based on their good reputations more than the amount of money they earn. Merchants are discovering that the wage earners are the backbone of their business and that they pay more promptly than those who are supposed to have pretty big incomes.

The new credit association is to take into membership every retail concern in the city. It hopes to establish a system that will work fairly for all—a system, for instance, that will extend credit to worthy people when it is needed, and not deny credit to a man who, some time ago, made application for a charge account and was refused because he paid his butcher and grocer in cash!

OBITUARY.

Alfred Mosely.

Alfred Mosely, for many years prominent in educational matters, died on Sunday, July 22nd, at his home, West Lodge, Hadley Wood, Barnet, England. He was head of the National Education Commission and was well known in the United States, having visited New York many times in connection with his work as an educator.

FOREIGN TRADE OPPORTUNITIES ARE PRESENTED BY BUREAU OF FOREIGN AND DOMESTIC COMMERCE.

The Bureau of Foreign and Domestic Commerce through its Special Agents, Consular Officers and Commercial Attachés is receiving information of opportunities to sell hardware and kindred lines in several foreign countries. Names and locations will be supplied on request to the Bureau in Washington or its District Offices. Such requests should be made on separate sheets for each opportunity, stating the number as given herewith:

24958.—An agency is desired by a company in Italy for implements and tools, files, rasps, drill points, etc.

24960.—A firm of commission merchants in India wishes to purchase and also to secure an agency for hardware, glassware, enamel ware, etc. Cash and credit terms are desired. Correspondence may be in English. Reference.

24969.—A company in Canada desires to purchase power washing machines. Quotations should be f. o. b. destination. Cash will be paid.

24972.—Metal ceilings and side walls are desired by a firm in India, and also an agency for this commodity on a commission basis. Terms, 60 days, usually; cash will be paid against documents at destination. Reference.

24988.—A distributing agency is desired by a firm in South Africa for hardware, etc. Quotations should be f. o. b. New York. Terms, cash against documents New York or approved credits. Reference.

24991.—An inquiry has been received through the American consul in Italy for aluminum ware for kitchen use, files, rasps, steel bits, iron hinges, steel metal drills, padlocks, Yale locks, especially for doors, iron screws, and steel vises. Catalogues are requested covering household hardware and tools for arts and crafts. Payment, four months from receipt of invoice or 30 days from arrival of goods. Correspondence may be in English. Reference.

RETAIL HARDWARE DOINGS.

Iowa.

The Smith Silo Hardware Company, Des Moines, has been incorporated with a capital stock of $10,000. J. E. Cole is president and B. J. Smith secretary-treasurer.

Peter Fell has sold his hardware store at Graettinger to Charles Jensen.

W. B. Smith Hardware Company, Mason City, has been incorporated with a capital stock of $30,000.

M. James has bought the hardware and implement store of A. J. Bensmiller at Oskaloosa.

Ed Hanson has sold his interest in the hardware business at West Union to Leslie Lehman.

The Cory Hardware Company, Des Moines, has been incorporated with a capital stock of $10,000 by W. D. Cory, E. C. Cory and E. J. Higgins.

Minnesota.

P. P. Friesen and Company, Butterfield, have sold their hardware store to Albert Peterson.

M. Pedrick has purchased the James Ferguson and L. Elison hardware stores at Douds.

The Hill Hardware Company's store at Litchfield has been sold to P. N. Barthel.

Henry Fechter has bought the Bert McNinich hardware store at Redwood Falls.

Montana.

Paul L. Bischoff and A. A. Johnson have bought the Roy Hardware Company's store at Roy.

Harry Francisco has opened a hardware store at Intake.

Nebraska.

G. W. Willey has sold his hardware store at Stapleton to J. W. Barkee.

North Dakota.

The Schroeder Hardware Company, New England, has been incorporated with a capital stock of $12,000 by F. A. Schroeder, J. S. Larson and Charles Simon.

South Dakota.

Royce Overholzer and R. H. Leach have purchased the Schwartz hardware store at Selby.

Utah.

The hardware store of the J. T. Bogan Hardware Company at Bingham was badly damaged by fire.

Wisconsin.

O. E. Burmiester has purchased the stock of hardware from Pelton's store at Middleton.

ADVERTISING CRITICISM AND COMMENT

Helpful Hints for the Advertisement Writer

Great is the power of suggestion! Intimate to a man or woman that a certain theatrical is very entertaining and immediately they are filled with an all consuming desire to see it. Suggest to them that a glorious time can be had at Somewhere Beside the Sea, and instantly they decide to spend their vacation there. Hint to them that a pretty garment can be purchased at Soandso's cheaply and quickly they rush to take advantage of the information.

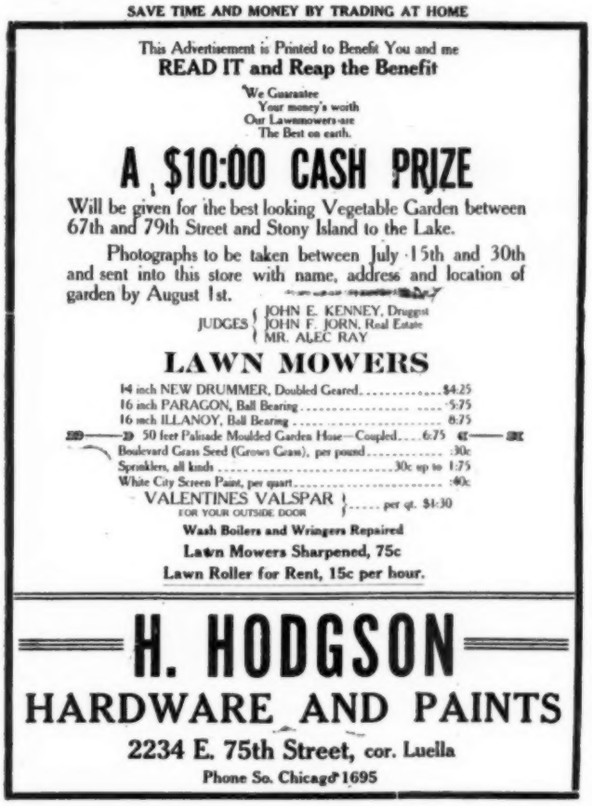
Have a Lawn Like Velvet
by getting a lawn mower that cuts the grass evenly and smoothly, without hacking it.
Full Ball Bearing, Double Gear, Quick Cutting, Easy Running.
In construction, the
KEEN KUTTER
Lawn Mower surpasses every other mower on the market. High Wheels, Adjustable Knife Blades; Dust and Dirt-Proof Gearings, nothing to get clogged.
We have a number of other mowers to choose from.
Come in to-day and look them over.
J. S. RADFORD

Truly has it been said that suggestion is a vital factor in salesmanship. The salesman clinches the sale by suggesting the new benefits, the new conveniences afforded by the article in question. Similarly the newspaper advertisement or the window display arouses interest by suggestion. The display of a washing machine, a stove or a kitchen utensil creates a desire to own it in the bosom of the housewife who passes by. The suggestion to the householder that he may have a lawn as smooth as velvet attracts his attention. He immediately wants to know how it can be done—what device will do it. And thus is effectiveness made certain in the accompanying advertisement which appeared in J. S. Radford's "Hardware Herald," Newbern, Tennessee. The heading contains the suggestion and the subsequent text matter on Keen Kutter Lawn Mowers carries out the idea. About the only thing lacking is price quotations.

* * *

Previous circulars issued by H. Hodgson, 2234 East 75th street, Chicago, have been reproduced and commented upon in these columns, and two recent copies at hand bear further evidence of his progressiveness in the matter of arousing interest in his stock of hardware and paints. One of these, which is shown herewith, announces a cash prize for the best-looking garden in Mr. Hodgson's community; and the other, similarly arranged, advertises garden hose, advising the back-yard farmer not to let his garden dry up after all the digging and planting, and reminding him that vegetables need much water, which the elements are not always obliging enough to supply.

The cash prize method of attracting business has been highly recommended by those conversant with


SAVE TIME AND MONEY BY TRADING AT HOME
This Advertisement is Printed to Benefit You and me
READ IT and Reap the Benefit
We Guarantee Your money's worth Our Lawnmowers are The Best on earth.
A $10.00 CASH PRIZE
Will be given for the best looking Vegetable Garden between 67th and 79th Street and Stony Island to the Lake.
Photographs to be taken between July 15th and 30th and sent into this store with name, address and location of garden by August 1st.
JUDGES JOHN E. KENNEY, Druggist JOHN F. JORN, Real Estate MR. ALEC RAY
LAWN MOWERS
14 inch NEW DRUMMER, Doubled Geared $4.25
16 inch PARAGON, Ball Bearing 5.75
16 inch ILLANOY, Ball Bearing 8.75
50 feet Palisade Moulded Garden Hose—Coupled 6.75
Boulevard Grass Seed (Grows Grass), per pound 30c
Sprinklers, all kinds ..... 30c up to 1.75
White City Screen Paint, per quart 90c
VALENTINES VALSPAR FOR YOUR OUTSIDE DOOR ..... per qt. $1.30
Wash Boilers and Wringers Repaired
Lawn Mowers Sharpened, 75c
Lawn Roller for Rent, 15c per hour.
H. HODGSON
HARDWARE AND PAINTS
2234 E. 75th Street, cor. Luella
Phone So. Chicago 1695

conditions in hardwaredom, and although it is quite an expense to advertise the contest, take care of details and pay the award, the dealer generally can feel reasonably certain that the venture will prove profitable in the end. Of course, it wouldn't be wise to neglect the opportunity of featuring pertinent items, which is the ulterior motive, so Mr. Hodgson very sensibly follows the announcement of the contest with a list of such articles as lawn mowers and rollers, garden hose, grass seed, sprinklers, etc., together with their price quotations.

* * *

INTENSIVE SALESMANSHIP.

Advertising is intensive salesmanship on a big scale. It flashes your selling point straight into the eye of the market; into the brain and heart of the ultimate consumer—a million of him at once. It is the wireless world-call of modern business, whether that business be trade or philanthropy, industry or war.

HEATING AND VENTILATING

HEATING AND VENTILATING ENGINEERS URGE BETTER VENTILATION IN CANTONMENTS.

The American Society of Heating and Ventilating Engineers at their Summer Meeting in Chicago last week felt it incumbent upon them to protest to the War Department regarding the proposed ventilation plans for the new army cantonments about to be erected. This week, on Tuesday evening, July 24th, a meeting of the Chicago Commission on Ventilation was held and a plan was worked out, which, if adopted by the government, will furnish twice as many cubic feet of air per soldier in the Rockford, Illinois, cantonments for the draft army as is at present proposed.

The action of the Chicago Commission resulted from the discussion which arose at the meeting of the heating and ventilating engineers following the reading of a paper by W. J. Mauer on "The Ventilation of Army Barracks." It was brought out that the proposed plans for the army cantonments were very undesirable, and as a result a telegram of protest was sent to the Secretary of War. Mr. Mauer and Dr. E. V. Hill, Head of the Division of Ventilation of the Sanitary Bureau of Chicago, subsequently designed squad houses, for eight men each, to take the place of company houses for 200 men each, the proposed buildings to provide 600 cubic feet of air per person.

The plans for squad houses were enthusiastically received at the meeting of the Chicago Commission because they are the most desirable from every point of view. "In the end," says Health Commissioner John Dill Robertson, "the small buildings will mean economy. If 200 men live together in one large room, it will mean that one man can give 200 men a contagious disease. When there are only eight in a room at the most only seven can be infected."

Those present at the meeting were Dr. Robertson, William D. Harkins, J. W. Shepherd, Dr. E. V. Hill, Harry Hart, George Beaumont, John Howatt, James Davis, S. R. Lewis, M. J. Sturm, Fred Postel, Dr. C. P. Caldwell, Dr. W. E. Evans and F. B. De Forest.

HOW IS OVERHEAD DETERMINED IN WARM AIR HEATING BUSINESS?

How do you determine percentage of overhead expense? Where do you apply percentage of overhead? Do you carry it entirely on the labor item or do you spread it over the entire estimated cost of the work?

These are the pertinent questions asked by "Heating Contractors" in a recent letter. The matter is of great importance and hence AMERICAN ARTISAN AND HARDWARE RECORD will be pleased to publish the views and ideas of warm air heating contractors on this subject. The question of overhead in the heating trade is very closely related to overhead in the sheet metal trade and a splendid treatment of this subject is given in the report of D. M. Haines, Chairman of the Overhead Expense Committee of the National Association of Sheet Metal Contractors, which is published on page 38 to 40 of this issue.

The letter on overhead expense in the heating contracting business, which is of great interest to all firms in the heating trade, reads as follows:

TO AMERICAN ARTISAN AND HARDWARE RECORD:

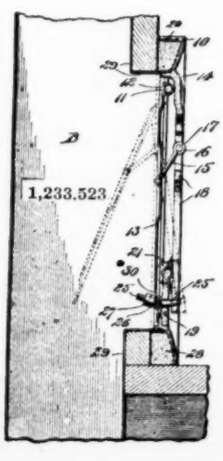
Under these extraordinary business conditions when the prices of material are advancing almost daily and they have now reached a limit which seems near the breaking point, we find, as every one else that business is becoming harder to get and that the question of the great advance in prices must be overcome before any order is placed. We, of course, refer to the heating trade business only as that is the only one with which we are acquainted.

Now we should like very much to know what is the practice of other large heating contractors in the matter of determining a percentage of overhead expense. What we mean by this is where they apply this percentage of overhead? Do they carry it entirely on the labor item or is it spread over the entire estimated cost of the work? Can we obtain any definite information as to what percentages the overhead expenses are of business similar to our own, that is, heating business?

While we have a very up to date and elaborate cost-keeping system yet we should like to know how near our overhead expense comes to being in line with that of other firms engaged in heating work and we hope that you can assist us.

HEATING CONTRACTORS.

WARM AIR REGISTER PATENTED.



Herbert W. Symonds, St. Louis, Missouri, has been granted United States patent rights, under number 1,233,523, for a warm air register which is described in the following:

In a warm air register, a frame provided near the lower ends of its inner vertical edges with inwardly projected trunnions and at the center of its lower horizontal inner edge with an upwardly projecting friction post, a grille removably and pivotally mounted in said frame by frictional contact with said trunnions and said friction post, and a single valve horizontally pivoted in said frame and actuated by said grille.

BUILDING CODE AND WARM AIR HEATER INSTALLATION

At the recent meeting of the Master Sheet Metal Contractors' Association of Wisconsin, J. M. Hollitz of Warm Air Furnace Committee reported that the new rules regarding the installation of heating apparatus were acceptable and fair to the installer as well as the householder. The Milwaukee Association, and particularly the Furnace Committee, is to be commended for their work towards that end, and their vigilant action may well serve as a model for the contractors and installers in other cities.

Municipal legislators are drawn from various walks of life and as a rule are not familiar with details of building construction. Hence when building codes are under consideration, it is up to the sheet metal and warm air heating contractors to see that the portion of the code relating to warm air heater installations is sensible, reasonable and effective. This has been done by the contractors in Columbus, Ohio, and in Omaha, Nebraska, the warm air heating codes of which have been published in AMERICAN ARTISAN AND HARDWARE RECORD, and in Milwaukee, Wisconsin, the essential part of this city's code, as revised April 15th, 1917, being published herewith. The Allied Sheet Metal Contractors' Association of Chicago also report favorable action by the city council on the matter of warm air heater installation, as a result of their efforts.

The sections of the Milwaukee Code pertaining to warm air heaters and other heating apparatus are as follows:

Foundations and Coverings.

Section 496. All boilers, furnaces, ovens or ranges enclosed with brick shall be placed on a foundation of fireproof construction; all those which are not enclosed with brick may be set on a floor of wooden construction, provided the floor has a protective covering not less than five inches thick of fireproof material on a continuous sheet metal plate not less than one-eighth-inch thick with riveted joints and turned up edges at least five inches high with an air space of not less than one inch between such fireproof material and sheet metal plate, such plate and covering shall extend beyond the heating apparatus, boiler, etc., not less than four feet in front and three feet at side and rear. There shall be no woodwork within two feet of any side or overhead of such boiler or furnace, etc. Any woodwork within three feet of such boiler or furnace, etc., shall be covered with an incombustible covering of not less than two-inch solid thickness. The same requirement shall apply to portable smelting furnaces, forges, core annealing and baking ovens.

In private residences the overhead woodwork may be within fifteen inches of the top of any heating apparatus, provided such top is covered with two-inch non-conducting covering and the overhead woodwork has an incombustible covering at least one inch in thickness extended three feet beyond the heating apparatus.

Boilers or Heating Apparatus in Places of Assemblage.

Section 497. Boilers or heating apparatus shall not be placed under the audience room or stage of a theater, school room, public hall or place of assemblage, or under any stairway or exit from any of these places, or a hospital, tenement, hotel or dormitory.

The room containing the boiler or heating apparatus in any such building shall be of fireproof construction throughout.

Ranges and Stoves.

Section 498. (As amended, Ordinance 326, April 10, 1916.) Kitchen ranges, heating stoves and laundry stoves placed on combustible floors shall be set on legs or ventilated metal base, and shall have a metal shield underneath extending not less than one foot each way beyond the stove or range. Such ranges or stoves shall not be placed within six inches of any combustible partition, and if placed nearer than twelve inches, such combustible partition shall be covered with a metal shield at least twelve inches higher than the range or stove. Any combustible ceiling or floor constructed overhead shall be at least three feet distant. This section shall not apply to kitchen or laundry ranges or stoves in private residences.

Hotel Ranges; Hoods.

Section 499. Hotel and restaurant ranges which are placed on a combustible floor construction shall be set on base five inches thick as called for in section 496. Any combustible ceiling or floor construction overhead shall be protected by a metal hood placed not less than six inches clear distance below the ceiling and extending one foot in all directions beyond the area of the range. The hood shall have a ventilating pipe of metal not less than eight inches in diameter placed at least six inches below if ceiling is of combustible material, and connected with a chimney flue. If such pipe must be run near or through a combustible partition the same protective coverings shall be applied as for a smoke pipe.

Fireplaces.

Section 500. All hearths or fireplaces shall be supported by trimmer arches or concrete at least four inches thick and at least twenty inches wide in front of the chimney breast, and at least two feet longer than the width of the opening. One end of such arch shall rest on the masonry of the chimney.

The wooden forms under the arches shall be removed before plastering the ceiling underneath.

The panels and backs of a fireplace shall be of brick not less than eight inches thick.

The fireplace opening shall be arched over with brick or have an iron lintel.

Casings for Boilers or Heating Apparatus Set in Brick in Non-fireproof Rooms.

Section 501. Boilers, furnaces and ovens when set in brick in a non-fireproof room shall be encased in double brick walls and covering not less than four inches thick with two-inch air space between.

Portable boilers, furnaces and ovens in a non-fireproof room shall have a double metal casing with at least one-inch air space between, or shall be covered with not less than two inches thickness of incombustible insulating material.

Cold Air Boxes.

Section 502. Cold air boxes shall consist of incombustible material for a distance of not less than three feet from the furnace.

Smoke Pipes.

Section 504. All boilers, furnaces, ovens and heating apparatus of any kind shall be connected with a chimney of brick, tile, concrete or other fireproof material, except in fireproof buildings. No metal smoke pipe will be permitted to extend through an outside wall or through the roof. Where smoke pipes pass through a wood or plastered stud partition or furred wall or floor they shall be surrounded either by a body of incombustible material not less than four inches thick, or by a double safety thimble made of two concentric rings of sheet metal at least one inch apart with provision for circulation of air between. A smoke pipe of more than twelve inches in diameter shall not pass through a combustible partition.

No smoke pipe shall be concealed in a combustible partition, nor shall it be run nearer than six inches to any combustible partition or nearer than nine inches to any unprotected ceiling constructed of combustible material.

Smoke pipes of more than six inches and not more than twelve inches diameter shall be at least twelve inches distant from a partition and eighteen inches from a ceiling constructed of combustible material and not protected by fire-resisting material.

Smoke pipes of more than twelve inches diameter and not more than twenty-four inches diameter shall be at least twenty-four inches from a partition and thirty-six inches from a ceiling constructed of combustible material which is not protected with fire-resisting material.

Smoke pipes of more than twenty-four inches diameter and not more than thirty-six inches diameter shall be at least four feet from a partition and six feet from a ceiling constructed of combustible material which is not protected with fire-resisting material.

Smoke pipes of more than thirty-six inches diameter shall only be contained in a room of fireproof construction.

A protection of a partition or ceiling as herein specified shall consist of not less than two inches hollow tile or concrete, or four inches of brick, or a metal shield affording a one and one-half-inch ventilating air space back of the shield. In all cases the protection shall be twice as wide as the diameter of the smoke pipe; or the smoke pipe may be covered with non-combustible insulating covering not less than one and one-half inches thick.

In case the smoke pipe is covered in such manner and the partition and ceiling are protected as above, the distance the smoke pipe shall be placed from the partition and ceilings may be reduced one-fourth of the distance.

Smoke pipes carrying off the products of combustion from a gas grate may be run inside a combustible partition, and through the roof if made of two concentric pipes of not less than number 20 galvanized iron with at least a one-half-inch air space between these pipes, and this pipe to be not less than one inch distant from any combustible material.

Chimneys, Flues and Stacks.

Section 505. All chimneys shall be built of brick, stone or other fireproof material, and in no case shall a chimney rest upon a flooring of wood or timber construction.

The foundation of chimneys, flues and stocks, whether inside or outside of buildings, or whether connected with the same or isolated, shall be designed and built in conformity with the provisions relating to foundations of buildings.

When the breast of a chimney or fireplace projects more than four inches, it shall be started and built on the same line from the foundation. In no case shall a chimney be corbeled out more than four inches from the wall, and in all such cases the corbeling shall consist of at least three courses of brick.

Chimneys shall have walls at least eight inches thick, unless terra cotta, fire clay or equally as good flue linings for the full height of chimney are used, in which case the walls shall be not less than four inches thick. No smoke flue shall be less than eight by eight inches. Not more than two stoves or two furnaces shall be connected with an eight by eight-inch flue, nor more than four stoves or three furnaces with an eight by twelve-inch flue.

The top of any chimney shall be not less than five feet above the top of the building of which it is a part, if such roof is a flat roof, nor lower than two feet above the ridge if such is a pitched roof. Every chimney shall be provided with a cleaning-out door at its base.

Area of Chimneys.

Section 506. (Amended Ordinance 234, January 17, 1916.) Chimneys with flues larger than two hundred and fifty square inches and less than five hundred square inches shall have surrounding walls not less than eight inches thick of brick. Such walls for a point ten feet above the inlet funnel shall have an extra lining of four inches fire brick, laid in fire clay, or in place of fire brick, fire clay or equally as good flue lining; tops of such chimneys to be at least eight feet above the roof, or five feet above the highest part of the roof of any building within fifty feet of such chimney.

Chimneys with flues of more than five hundred and less than eight hundred square inches shall have not less than twelve-inch walls for the first thirty-six feet, the wall of such chimney from a point two feet below to a point fifteen feet above the inlet funnel shall have an extra lining of four inches of fire brick laid in fire clay, or in place of fire brick, fire clay or equally as good flue lining; the top of such chimney to be at least ten feet above the roof or seven feet above the highest part of the roof of any building within fifty feet of such chimney.

Chimneys with flues more than eight hundred and less than eighteen hundred square inches shall have surrounding walls not less than twelve inches thick to the height of forty-five feet, and shall have additional four-inch lining of fire brick laid in fire clay, with four-inch air space in wall opposite the inlet funnel, the lining to commence four feet below the inlet and extend twenty feet above the same, to have opening from flues into the air space at top and bottom of the lining; the tops of such chimneys shall be built not less than twelve feet above the roof and not less than two feet above the roof of any building within a radius of fifty feet.

For chimneys with .flues of greater area than eighteen hundred square inches the thickness of walls shall be increased four inches for each increase in area of one thousand square inches or fractional part thereof; but in all cases the surrounding walls of chimneys of any size shall be so proportioned that the brick work in the same will not be subjected to strains greater than the maximum strains for the brick work elsewhere fixed in this article.

Isolated Chimneys.

Section 507. If isolated chimneys are built, they shall also have hollow walls and shall be so designed and constructed that the strain upon any part thereof, due to the weight of the stack itself and to the wind pressure, shall never exceed the limits fixed elsewhere in this article as the maximum strain for brick masonry.

Metallic Chimneys.

Section 508. In business or manufacturing buildings metallic chimneys or smoke pipes shall not be used in such manner as to pass through the floors or roofs of the same, unless such metallic smoke pipes or chimneys are enclosed in brick or tile walls and the pipe from bottom to top inside of said building. Where such metallic smoke pipe or chimney passes through the roof only, it shall be separated from the woodwork of such roof by at least twelve inches of incombustible material.

Vent Pipes.

Section 509. (As amended, Ordinance 214, January 3, 1916.) Vent flues or ducts for the removal of foul or vitiated air in which the temperature is the same as that of the rooms may be constructed of iron, or other incombustible material, and no such pipe shall be used for any other purpose.

Incombustile Pipe Covering.

Section 512. No concealed pipe shall be covered with a covering whose non-conductivity depends upon cork, felt, or any other organic matter.

All coverings of heated surfaces, or surfaces requiring to be protected from heat, and all concealed or inaccessible steam or hot water pipes (excepting all cold and ice water pipes), or other pipes shall be made of standard fire-resisting covering, either of magnesium carbonate, calcium carbonate with binders of asbestos fibre, or asbestos fibre or equally as good sheet covering.

Ducts for Pipes.

Section 513. (As amended, Ordinance 214, January 3, 1916.) All ducts for hot air, steam or hot water pipes shall be enclosed on all sides with fireproof material, and the opening through each floor shall be properly fire-stopped, except as otherwise provided herein.

Registers.

Section 514. Registers located over a brick furnace shall be supported by a brick shaft built up from the cover of the hot air chamber; said shaft shall be lined with a metal pipe, and all wood beams shall be trimmed away not less than four inches from it. Where a register is placed on any woodwork in connection with a metal pipe or duct, the end of the said pipe or duct shall be flanged over on the woodwork under it. All registers for hot air furnaces placed in any woodwork or combustible floors shall have stone or iron borders.

All register boxes shall be made of tin plate or galvanized iron with a flange on the top to fit the groove in the frame, the register to rest upon the same; there shall be an open space of two inches on all sides of the register box, extending from the under side of the border to and through the ceiling below. The said opening shall be fitted with a tight tin or galvanized iron casing, the upper end of which shall be turned under the frame. When the register box is placed in the floor over a portable furnace, the open space on all sides of the register box shall not be less than three inches. When only one register is connected with a furnace said register shall have no valve.

Register boxes, heads or collars in floors or wall shall be made double and set flush with floor or plaster line.

Permits.

Section 515. (Repealed and reordained, Ordinance 214, January 3, 1916; amended, Ordinance 326, April 10, 1916.) Before proceeding with the construction, erection, alteration or remodeling of any boiler, furnace, oven or range included in this article, or for any repairs or alterations of same exceeding fifty dollars, a permit shall first be obtained from the inspector of buildings by the heating contractor for such boiler, furnace, oven or range, except kitchen or laundry ranges or stoves in private residences. Before the inspector of buildings shall issue such permit, an application shall be filed with him by such heating contractor, specifying the location of such boiler, furnace, oven or range and the size or capacity of same. If such application shows that such installation, remodeling, altering or repairs are to be done in conformity with the provisions of this article, the inspector of buildings shall approve of the same and shall issue a permit to such applicant, for which permit a fee of one dollar shall be paid into the city treasury and such permit shall be duly signed by the city treasurer and the inspector of buildings. This fee shall be known as the permit fee and shall cover all fees for inspections, but no fee shall be required to be paid for a permit for repairs or alterations of any boiler, furnace, oven or range.

The purpose of this article is solely for protection against fire and other hazards, and not for the supervision of the radiation and technical installation of such heating plants.

Heating Apparatus in Basements.

Section 517. All rooms in cellars or basements containing heating boilers, furnaces or stoves of any kind, if not constructed of fireproof material, shall have all ceilings lathed and plastered with two coats of brown mortar.

When heating boilers are used, that portion of the ceiling over the boiler within a radius of four feet therefrom shall be plastered on metal lath or be protected by incombustible shields.

WARM AIR FURNACE HEATING.

Of the various papers read at the summer meeting of the American Society of Heating and Ventilating Engineers in Chicago, July 18th to 20th, that of most interest to the warm air heating trade was the paper by I. F. Grumbein of Philadelphia, on "Warm Air Furnace Heating," which was as follows:

WARM AIR FURNACE HEATING.

Rapid strides forward have been taken in the heating and ventilating of buildings during the last decade. For more than fifty years, warm air furnaces have been installed in buildings for heating them but we are frank to admit that a large proportion have not been entirely successful, due principally to two causes:—first, improper design and construction of the furnace and second, improper installation of the furnace and the piping. Perhaps the part failure of these jobs was due to a contributary cause, in the lack of proper judgment used in the selection of the type of furnace to be installed.

In the selection of the type of furnace, due consideration must be given to height and size of chimney, depth of basement or cellar in which the furnace is to be placed and the size and quality of fuel to be used; some types of direct-draft furnaces are admirably adapted for bituminous coal while this same type could not be economically used with large anthracite coal. The indirect type only should be selected where anthracite will be used, except where it is the intention to burn pea or smaller size coal, or where the chimney may lack height or size. There are, of course, a large number of instances where a good grade of bituminous coal is successfully used, but this requires frequent cleaning of flues, radiators, smoke pipe and chimney and proper attention to the fire.

By improper design and construction of the furnace, we refer to ill-fitting parts, poor or light material and material unsuited to the requirements, improper allowance for contraction and expansion, incorrect ratio between grate and radiating surfaces, and the use of steel plate where cast iron would be far better.

Improper Installation Hampers Success.

Improper installation is by far the greater cause of unsuccessful jobs. Furnaces should be installed so that the greatest possible rise or pitch can be given to the pipes leading to the risers, except very short pipes running to rooms that are favorably located. Risers should be of adequate size to furnish plenty of heat and air at a velocity of 280 feet per minute for first floor rooms and 400 feet for second floor rooms, with a slight addition to the size of piping leading to the exposed room or rooms at the greatest distance from the furnace. A fresh air duct from the windward side of building should be connected to the bottom of the furnace casing. The area of this duct should equal the area of all the warm air pipes taken off the furnace case, with a damper for regulation of the fresh air supply.

Insulating Warm Air Heater Casing.

A great deal has been written on the subject of insulating the furnace casing. We recommend an outer casing of galvanized iron, covered with one thickness of 14 pounds asbestos and an inside casing of black iron with air space between the two casings of about one inch. Our test made in zero weather with this casing and an additional covering of the outer casing of one inch of plastic asbestos showed a gain of less than 4 percent, which we may consider a negligible quantity.

Pipeless Warm Air Heaters.

We read a great deal in the journals in reference to the "pipeless" and "one-pipe" furnaces which are now sold and installed in one form or another. The principle is good but has its limitations, and for that reason, the National Warm Air Heating and Ventilating Association has prepared the following resolution relative to this type of heater:

"Whereas, the manufacture of the so-called pipeless furnace has to some extent increased and its possibilities are liable to be misunderstood, be it

"Resolved: First, that the National Warm Air Heating and Ventilating Association recommend to manufacturers the avoidance of all extravagant and unwarranted claims in reference to the pipeless furnace;

"Second, that it is not a warm air furnace in the fullest sense;

"Third, that in the best interests of the industry, dealers are urged to advise prospective customers of its true limitations;

"Fourth, that prospective purchasers of warm air furnaces are advised to be fully satisfied as to whether or not a heater is adapted for the use intended, before contracting for same."

The claim that an entire large house can be heated by them should not be made in the interest of the furnace business. In our judgment installations of this kind should be restricted to very small residences (and even here we would not recommend them owing to the entire elimination of fresh air duct from outside), to small stores, and to corridors of small school houses. In the latter class of building, we have seen them in successful operation for more than twenty years, but we would recommend the re-circulating feature to them. Where the furnace has been placed at or near the center of the corridor, with the heat register directly over the furnace, and with one or more re-circulating ducts placed at other points in the corridor floor, and the ducts attached to the bottom of the furnace case, we have found the most gratifying results. Danger from contagious diseases are no greater than with any other method of heating these corridors, and where disinfection is applied, the quickest and most positive results follow by re-circulation of the air in the corridors.

Rule for Ordinary House Heating.

Following, we will give a rule for ordinary house heating which has proven to be thoroughly reliable:

"To determine the size of furnace required to heat a given building to 70 degrees in zero weather, reduce the exposed wall surface to equivalent glass surface. This is done by finding the square feet contained in all the exposed walls; also the square feet of glass surface. After deducting the glass from the wall surface, divide the remaining wall surface by four, as the loss of heat through glass is four times as great as it is through the ordinary wood and plaster wall.

"Since 1 square foot of glass will transmit about 85 heat units per hour when the difference between the inside and outside temperatures is 70 degrees, to find the total loss of heat by transmission, multiply the number of square feet equivalent glass surface by 85. To this must be added the loss of heat by leakage or ventilation.

"If the air enters the room through the registers at 140 degrees which is about the temperature in zero weather, one-half the heat supplied is carried away by the air escaping as 70 degrees and the other half is lost through walls, windows, etc. Therefore, twice the amount of heat lost by transmission must be supplied by the heater.

"One pound of good anthracite coal will give off about 13,000 British Thermal Units. Of this amount the best furnaces will safely utilize 70 per cent. In very cold weather a rate of combustion of 4 to 5 pounds of coal per square foot of grate surface per hour must be maintained. As the furnace has an efficiency of 70 percent of the fuel, which would be about 9,000 British Thermal Units per pound of coal burned, we have 9,000 multiplied by 5 equals 45,000 British Thermal Units per hour per square foot of grate surface transmitted to the air passing through the heater. Therefore, the equivalent glass surface multiplied by 85 multiplied by 2 divided by 45,000 will give the size of grate in square feet. When this is reduced to square inches the diameter of the grate can easily be found.

"The main steps involved in calculating the size of warm air pipes for rooms are to determine the loss of heat through walls, windows and floors or ceilings of the room; the volume of warm air required to offset this loss, and the velocity of air in the pipes.

"The loss of heat is calculated by first reducing the total exposure to equivalent glass surface. This is done by adding to the glass surface one-quarter the area of the exposed wood and plaster walls, and one-twentieth for area of the floors or ceilings to cover loss of heat to non-heated basements or attics. Ten percent is added when the exposure is particularly severe. Having obtained the equivalent glass surface, multiply by 85 (the loss of heat per hour per square foot of glass with 70 degrees difference in temperature); the product will be the total loss of heat by transmission per hour. If the temperature of the entering air is 140 degrees and that of the room is 70 degrees, the air escaping at approximately the latter temperature will carry away one-half the heat brought in. The other half, corresponding to the drop in temperature from 140 to 70 degrees, is lost by transmission.

"With the outside temperature at zero, each cubic foot of air at 140 degrees brings into the room 2.2 heat units. Since one-half of this can be utilized to offset the loss by transmission, to ascertain the volume of air per hour at 140 degrees required to heat a given room, divide the loss of heat by transmission by 1.1. The quotient is the volume sought. This result divided by 60 gives the number of cubic feet per minute.

"Assuming a velocity of 280 feet for the first and 400 feet for the second floor (these velocities are readily attainable in practice), the area in square feet is determined by dividing the volume by the velocity in feet per minute. This area is reduced to square inches, from which the diameter of the pipe is obtained."

Reduction for Metal Stripping.

These figures are based on using wooden window frames and sash well fitted with single glazing. Where a first-class quality of metal stripping is used for wood sash, a reduction can be made of 15 percent; where hollow metal frames and sash are used, we will remain uncomfortable near the windows in zero weather, and when a strong wind is blowing

against the window, even if we add 50 per cent of heat to the room.

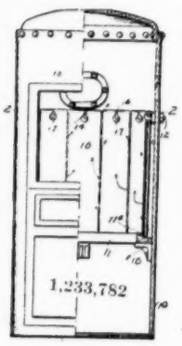
Test Gives Gratifying Results.

In a test recently made, we obtained some gratifying results. The grate surface equalled 2.5 square feet. A total of 5 pounds of anthracite chestnut coal with a heat value of 14,100 British Thermal Units delivered 60,840 and showed an efficiency of 86 percent, but when we doubled the rate of combustion, the efficiency was reduced slightly below 80 percent.

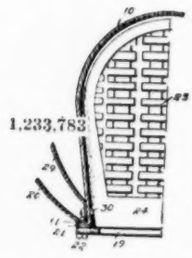
In house heating, it is very seldom that we are enabled to install a fan to force circulation. This has proven to be of great benefit to the installation in more ways than one; namely, it increases the life of the furnace, enhances the comfort of the user and reduces the cost of heating by increasing the efficiency from 6 to eight per cent in ordinary practice.

WARM AIR HEATER LINING AND WARM AIR HEATER PATENTED.

Under numbers 1,233,782 and 1,233,783, United States patent rights have been granted to Donald B. Howard, Des Moines, Iowa, for a warm air heater lining and a warm air heater, respectively, described herewith:



Number 1,233,782: In a furnace, a furnace wall, a grate rest mounted in the lower interior of said furnace, having a vertical flange spaced from said wall, a plurality of supporting members on said wall, a plurality of liner plates loosely supported on said respective supporting members, said plates having their lower ends received between said flange and said wall, said liner members being spaced from each other, the parts being so arranged that the liner members may be moved horizontally in a variety of directions and may also be moved vertically when installed in the furnace.



Number 1,233,783: In a furnace, the combination of a furnace body portion formed of sheet or plate metal, substantially horseshoe shaped in cross section, a circular dome shaped top, a filling piece riveted to the front portion of the top and also to the sides of the body portion and inclined from the top downwardly and forwardly, the front edge of said filling piece being formed with a depending flange, the side edges of the furnace body at the front being formed with outwardly extending flanges, a cross piece riveted to the flange of the filling piece, a furnace front fitted to the said flanges at the side of the body portion and the said filling piece, and a furnace casing surrounding the body portion and secured to the rear surface of the outwardly extending flanges at the front of the furnace body portion, whereby any leakage of gas or smoke that occurs between the furnace front and the body portion will not enter the space within the interior of the furnace casing.

INSTALLERS MUST WATCH MUNICIPAL REGULATIONS.

In revising building codes and attempting to regulate certain lines of work, municipal authorities often consider but one phase of the question. This is due to the fact that in formulating the code they overlook bringing into consultation representatives from the different lines of building work. Fire protection seems to be the predominating idea, which, of course, is all right. No fire-prevention features should be omitted, but there are parts of building construction that have other features just as essential as fire prevention, and some of these are often overlooked. Warm air heating plants are just as essential to health as their proper installation is to fire prevention.

A letter from a Texas member of the National Association of Sheet Metal Contractors to the national headquarters clearly illustrates the one-sidedness of the building code recently adopted in his city. This member says:

"Our City Council lately got up an ordinance controlling the installation of warm air furnaces without asking the advice of anyone here, and they certainly did get up a 'cracker-jack.' I am sending a copy of this ordinance so you can see what they have. Now, we wish to get a specification for a good law which will thoroughly protect the owner of the building, and at the same time will not be so stringent as to require absolutely useless work and increased expense without giving proper returns. We wish to present this as a local body to the City Council and ask them to pass and enforce it."

This ordinance revised the entire building code in which was included the subject of the warm air heating plant. The only object sought in this portion of the ordinance was fire prevention. The Council had taken almost verbatim a section of a proposed code compiled for general conditions. There was not the slightest thing in the code that looked to the sanitary feature or efficiency of the plant.

Members of municipal bodies are drawn from all walks of life, and it is not to be expected that they can be familiar with every detail of building construction. When these building codes are under consideration, it is squarely up to the warm air heating contractors to see that the portion of the code relating to warm air heater installations is sensible, reasonable, effective and looks to the healthfulness of the home as well as to the fire prevention part.

ABANDONING CUBICAL CONTENTS RATING OF WARM AIR HEATERS.

In the catalog of the Superior Warm Air Heaters the manufacturers have abandoned the old rating method of "Cubical Contents," pointing out that the real standard of heating value in a warm air system is the number and size of heating pipes the apparatus will supply with air warmed to the required temperature.

The heat unit adopted as the world-wide standard is the B. T. U. or British Thermal Unit, which is the amount of heat required to raise the temperature of one pound of water one degree Fahrenheit. This same B. T. U. will raise one cubic foot of air fifty or sixty degrees, varying slightly according to the initial temperature. It is, of course, possible to express all heat values in terms of British Thermal Units, but, according to the company, it is just as accurate and very much more simple to reduce it to the area of the warm air pipes to be carried.

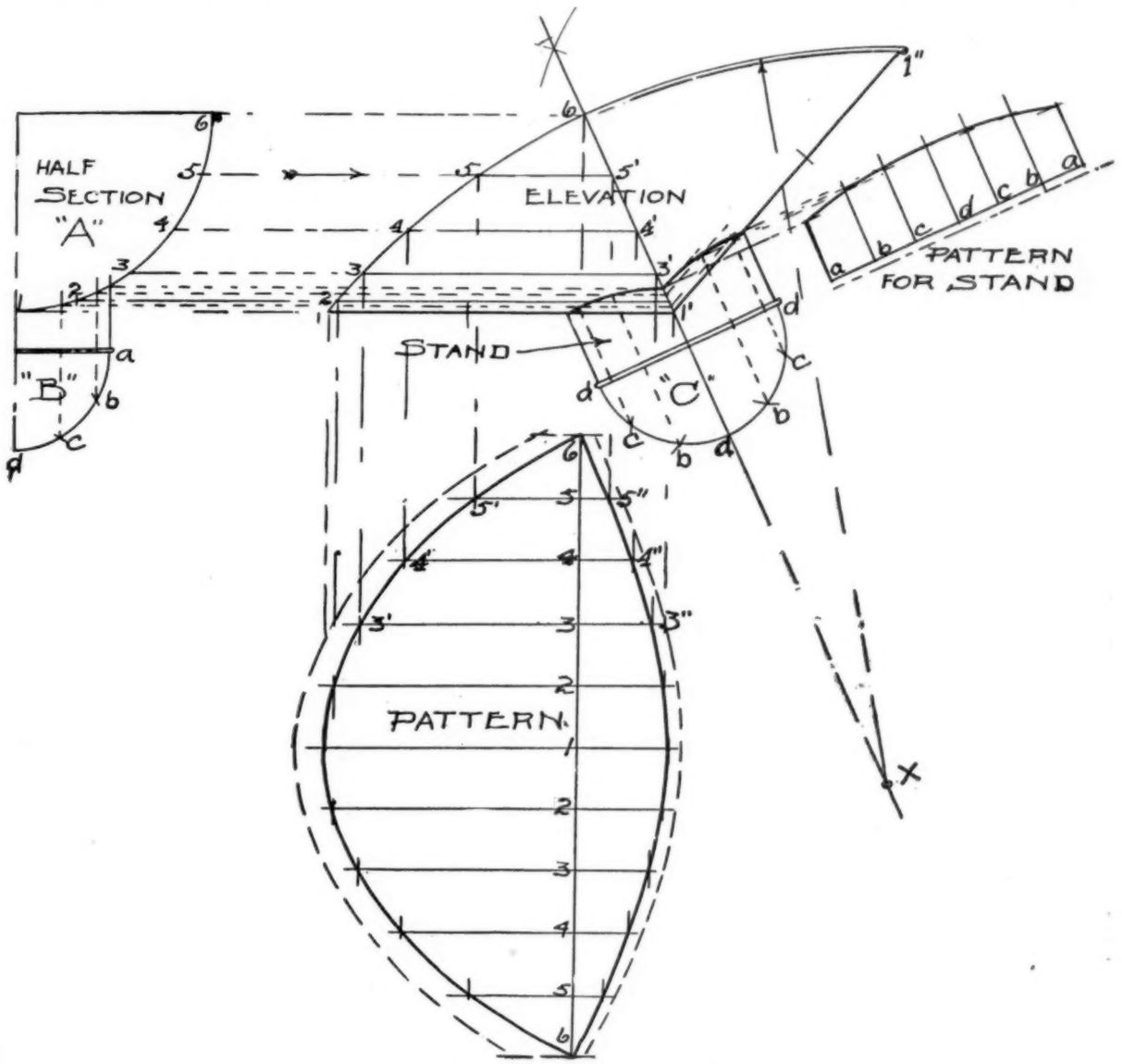
Hence they have adopted as their standard of rating the "Square inches of cross section pipe area the heater will supply for first floor at a proper temperature and velocity." The ratings of the Superior Warm Air Heaters are the result of actual experience and are guaranteed to be correct, provided that installation is proper and conditions are fair. Copies of the catalog will be sent upon request by the Utica Heater Company, 218-220 West Kinzie Street, Chicago, or the home office at Utica, New York.

PRACTICAL HELPS FOR THE TINSMITH

PATTERNS FOR SCALE SCOOP.

BY O. W. KOTHE.

Replying to the inquiry of the Subscriber according to the sketch submitted of Scale Scoop with Base, which appeared on page 38 of the July 7th issue of AMERICAN ARTISAN AND HARDWARE RECORD, the accompanying drawing will give a method of solution.



Development of Patterns for Scale Scoop.

The first thing is to draw the angle 1-1′-1″ and establish the miter line 1′-6, extending this line indefinitely. Measure the height of your scoop as 1′-6 and then set your dividers to a radius selected by trial as in point X and describe the arc 1-6-1″. This gives your elevation. The half section "A" shows the half view of its diameter. Divide this into any number of equal spaces and project lines into elevation, thus cutting the top curve and also the miter line.

For the pattern from the point 6 drop a line indefinitely and with dividers pick the stretchout from "A" and set it off as 6-1-6 in pattern. Now from each point in elevation as 1-2-3-4-5-6, also 1′-2′-3′-4′-5′, drop lines cutting lines having similar number in stretchout as in points 5′-4′-3′, etc., also 5″-4″-3″, etc. This gives you the points to trace the outline of pattern. On the outside of this, allow for the wire edge and also the seaming edge.

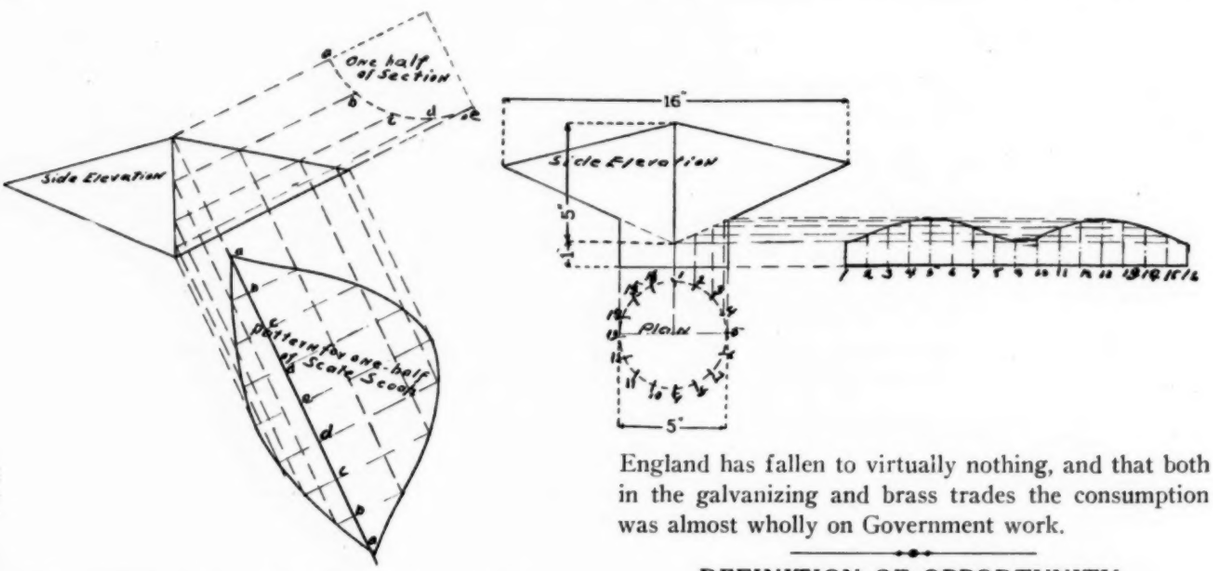
To develop the stand, draw the end view with the section "B," also the elevation view "C." From all points in "B," square up lines cutting the section "A." From these points, square over line into elevation thus

cutting lines of similar number in "C." This gives you the miter line where the stand intersects the scoop. The pattern can then be projected from this miter line the same as you would a branch of different diameters. In fact the principle of this is exactly the same. Wire edges and edges for seaming must be allowed extra.

ANOTHER SOLUTION OF SCALE SCOOP PROBLEM.

To American Artisan and Hardware Record:

Finding a problem on page 38 of the July 7th issue of American Artisan and Hardware Record, in which one of your subscribers from Chicago wants to know how to draw the pattern for a Scale Scoop with a base, I am sending you a solution of this problem.



Development of Pattern for Scale Scoop With Base.

If he will study the accompanying drawing, he will be able to draw the pattern without any extra explanation, as I have made it quite clear in the sketch.

Yours truly,

Alex Zollman.

Burlington, Wisconsin, July 22, 1917.

AMERICAN SHEET AND TIN PLATE COMPANY ADVANCE MILL WAGES.

The American Sheet & Tin Plate Company, Pittsburgh, advanced wages of its tin mill employes 14½ percent and boosted wages of sheet mill men about 11 percent, effective July 1st. The wages offered by the Company are said to be slightly higher than those paid by mills working under an agreement of the Amalgamated Association of Iron, Steel and Tin Workers.

WORTH WHILE READING.

To American Artisan and Hardware Record:

Your magazine is well worth while reading.

Yours truly,

Alex Zollman.

Burlington, Wisconsin, July 22, 1917.

DECLINE OF GALVANIZING IN ENGLAND.

Figures have just come to hand showing the production of galvanized sheets in Great Britain in 1916 amounted to only 131,707 tons as against 351,593 tons in 1915. No figures are available of the production before the war, but as the exports of galvanized sheets from Great Britain in 1913 amounted to 762,075 tons, it is possible to gather some idea of the tremendous falling off which has taken place in this branch of the trade.

It will be seen that while the production of galvanized sheets in the United States has undergone a recession, it is nothing to be compared with what has taken place in England. These figures serve to confirm the reports published from time to time stating that the consumption of spelter for ordinary uses in England has fallen to virtually nothing, and that both in the galvanizing and brass trades the consumption was almost wholly on Government work.

DEFINITION OF OPPORTUNITY.

Opportunity is the thing you do today to get ready for tomorrow—opportunity is within yourself. It is the power to see profitable work to be done and the efficiency to do it well. The powers of nature and of human nature have existed always, ready to make a winning combination for the man who knows how.

For every failure habit, there is a success habit. For every wrong business method, there is a right method. For every ability, there is a market; and every line of goods which represents a true service to the buyer can be profitably sold.—L. C. Ball.

ITEMS.

The Brier Hill Steel Company, Youngstown, Ohio, who bought the plant of the Western Reserve Steel Company several months ago, are erecting an addition of two hot sheet mills to this plant and have already added a new warehouse.

A company has been organized at Philadelphia to manufacture tin plate on a process developed by Thomas Stamford. The name of the organization is the Non-Rust Terne Plate Company, the officers being George W. Williams, president; Thomas Stamford, vice-president; and Henry R. Wormick, secretary and treasurer.

MANY DESIRABLE FEATURES IN WISCONSIN LEGISLATION ON INDUSTRIAL EDUCATION.

The important features of the new legislation concerning Vocational Education which was enacted during the 1917 session of the Wisconsin Legislature, are outlined as follows by Frank L. Glynn, Secretary of the State Board of Industrial Education, Madison, Wisconsin:

1. It places the entire power of administration and supervision in a state board composed as follows:

Appointed by governor—term six years:
- Three skilled employes.
- Three employers of labor.
- Three practical farmers.

Ex-officio:
- State Superintendent of Schools.
- Member of State Industrial Commission.

2. It defines the powers and duties of the state board as follows:
- Control state aid.
- Meet quarterly and otherwise as necessary.
- Elect officers.
- Report biennially.
- Employ assistants.
- Direct development and supervision of schools.
- Inaugurate and determine organization, plans, scope of vocational schools.
- Approve qualifications of teachers.
- Approve courses of study.

3. It accepts the terms of the Smith-Hughes bill concerning federal aid for vocational education and designates the state board as the state authority to cooperate with the federal department.

4. It changes the name of the State Board of *Industrial* Education to be the State Board of *Vocational* Education and designates the *schools* coming under the jurisdiction of this board as *"vocational"* schools, instead of *"industrial, commercial, continuation, or evening,"* as formerly.

5. It provides that local boards of industrial education may erect buildings and defines the manner of letting contracts, etc.

6. It provides that, beginning with September 1, 1917, in places where vocational schools are maintained, all minors, between fourteen and sixteen years of age, residing or employed in that place and not attending any other school, shall attend vocational school eight hours a week for at least eight months a year and such additional months or parts thereof as the other public schools of such city, town or village are in session in excess of eight during the regular school year.

7. It provides that, until September 1, 1918, in places where vocational schools are maintained, all minors, between 16 and 17 years of age, residing or employed in that place, and not attending any other school, or not indentured as apprentices according to section 2377, shall attend vocational school four hours a week for at least eight months a year and such additional months or parts thereof as the other public schools of such city, town or village are in session in excess of eight during the regular school year.

8. It provides that, after September 1, 1918, in places where vocational schools are maintained, all minors between 16 and 17 years of age, residing or employed in that place, and not attending any other school or not indentured as apprentices, according to section 2377, shall attend vocational school eight hours a week for at least eight months a year and such additional months or parts thereof as the other public schools of such city, town or village are in session in excess of eight during the regular school year.

9. It provides that, after September 1, 1918, in cities where vocational schools are maintained the working time and the school time for minors between sixteen and seventeen years of age shall not exceed fifty-five hours a week.

10. It provides that permits to work must be obtained by minors between fourteen and seventeen years of age before they are employed. This applies also, in cities where vocational schools are maintained, to domestic service except of a casual nature.

This permit was formerly required only between fourteen and sixteen years of age and did not apply to those employed in domestic service.

11. It provides that permits for minors to work shall be issued only by agents deputized by the State Industrial Commission to do so.

12. It provides that school attendance officers shall enforce attendance at vocational schools.

13. It authorizes cities to increase the mill tax for vocational schools from one-half mill to three-fourths mill.

14. It provides that state aid to schools shall be distributed as follows:

Section 20.33 (2). The remainder shall be distributed for state aid for vocational schools established and maintained pursuant to subsection (1) of section 41.15 and any school once granted such state aid shall be entitled thereto as long as the character of its work meets with the approval of the state board of vocational education.

"Section 41.15 (1). In every town or village or city of over five thousand inhabitants there shall be, and in towns, cities and villages of less than five thousand inhabitants there may be a local board of industrial education, whose duty it shall be to establish, foster and maintain vocational schools for instruction in trades and industries, commerce and household arts in part-time-day, all-day and evening classes and such other branches as are enumerated in section 41.17."

"(Section 41.17) (1). The qualifications of teachers and the courses of study in these schools shall be approved by the state board of vocational education, and shall include English, citizenship, physical education, sanitation and hygiene and the use of safety devices, and such other branches as the state board of vocational education shall approve."

15. It provides that an annual report shall be rendered by the various local boards of industrial education to the state board of vocational education on which state aid will be based.

This report shall include the following:
- Character of work done.
- Number, names and qualifications of teachers.
- Costs.
- Other information as required by the state board.

OVERHEAD EXPENSE

By D. M. HAINES
Chairman Overhead Expense Committee, National Association of Sheet Metal Contractors.

Much valuable information on the subject of "Overhead Expense" is given in the report of the Overhead Expense Committee of the National Association of Sheet Metal Contractors which D. M. Haines, chairman of the committee, delivered at the convention in Cleveland. Many sheet metal contractors, as is so aptly brought out in the report, prefer to take the easiest way of estimating their overhead at a certain percentage of the cost of the raw material and labor, and then they wonder why net profits are so small. Overhead is an item of cost that embodies numerous factors, and all of these should be taken into consideration because indifference or carelessness in this respect has been responsible for many a business failure. The report read in part as follows:

D. M. Haines.

OVERHEAD EXPENSE.

A very large number of sheet metal contractors have but a vague idea of that elusive item called "Burden" or "Overhead Cost" or "Overhead Expense" or simply "Overhead" and many who think they understand it, upon close analysis, are found to have guessed it and in some instances estimated the same "Overhead" as their former employer and never figured accurately whether or not it was too much or too little for their own use. Others have heard that their chief competitor added a certain percentage for "Overhead" and have done likewise. In fact they have taken figures, the accuracy of which they were unable to prove, and entirely ignored their own, which they could easily verify and which are the only ones it is at all safe to use.

In figuring cost, it is not the two large items of raw material and direct labor which cause so many errors, but it is those various charges which go to make up overhead. The thoroughness with which a man studies and understands overhead and applies his knowledge, determines his success or failure as a business man, in a large majority of cases. It is made up of items which are easily seen from day to day, and at the close of the year usually are plainly set forth in the various totals. The trouble lies not in the fact that the items are entirely overlooked, but that they are not given full consideration in figuring cost and profit.

Overhead is one item of cost which many men seem satisfied to have some competitor figure for them. We frequently have been told by different ones whom we have questioned as to how they arrived at their cost, that they figured the raw material, direct labor and added 10 percent for overhead. When questioned further as to the 10 percent, they have said they added that amount because it was "customary." No man is safe in accepting the figures of any other shop than his own in establishing his cost. No two shops are managed exactly alike and with equal ability and you are inviting disaster if you accept any figures that are not produced from your own operations.

Overhead.

Overhead is just as much a part of your cost as is raw material and labor and the man who overlooks that simple, yet important fact, is headed straight for trouble.

Let us now carefully consider the various items which compose it:

1—Stationery, 2—Postage, 3—Telegraph, 4—Telephone, 5—Insurance, 6—Advertising, 7—Fuel, 8—Light and heat, 9—Traveling expenses, 10—Taxes, 11—Power, 12—Rent, 13—Repairs, 14—Depreciation, 15—Salaries of employes not engaged in productive labor, 16—Claims allowed, 17—Bad debts, 18—Attorney and collection fees, 19—Salaries of principals, 20—Interest on borrowed money, 21—Interest on investment.

We do not claim the above list contains every possible item, but it represents the most important ones.

Regarding items from 1 to 12 inclusive, we believe there can be no difference of opinion and shall not discuss them further.

13—Do not charge repairs on machinery and tools to Tool or Equipment account nor repairs on buildings to Plant account.

One man, who was at the point of raising the flag of distress, was found, upon examination of his books, to have carefully charged all repairs made on tools to Equipment account. He was carrying his old, worn-out tools on his books at more than the cost of new ones.

14—The man, above mentioned, also carefully refrained from charging off each year for Depreciation. Tools and machinery should be depreciated on your books yearly in proportion to the reasonable life of each one.

Buildings also should be depreciated, but not to the same extent.

15—Salaries of superintendent, foreman, watchman, office help, salesmen—in fact everyone not engaged in productive labor, properly belong to overhead.

16, 17, 18—Claims you have been compelled to allow, bad debts you have incurred and attorney and collection fees you have paid must not be ignored.

At the close of each year carefully check over your bills and accounts receivable. Those you know to be uncollectable or very doubtful, charge to Profit and Loss. Those concerning which there is some question as to how much you may finally realize, charge to Suspense Account.

In this way you will neither fool yourself nor your creditors, because your bills and accounts receivable will show nothing but clean, collectable items worth face value.

19—An individual, a partner or an officer of a corporation, should consider his services worth a fair salary and not feel content with simply his share of the earnings of the business. Therefore, it is necessary and right that fair salaries for principals should be considered in Overhead.

20 and 21—There is no question as to interest on borrowed money properly belonging to Overhead, but much discussion has arisen in the past concerning the correctness of including interest on investment, and we fear many still persist in ignoring it, although a little careful thought and analysis will show the necessity.

Why have you invested your money in a manufacturing enterprise? Simply because you expect by that means to make your capital earn more than it would if deposited in a bank or loaned on good security. Today a well secured investment will seldom earn more than 5 percent, often less; therefore a fair rate should be charged to overhead, so that your selling price will be placed at a figure that will make your business risk profitable.

It certainly is discouraging to anyone to carry on a business for 365 days with all its attendant worries, and find, at the close of the year, it has earned just about what the capital would have earned had it been safely invested and the owner been free from so much care and responsibility.

Now look at it from another standpoint. Let us suppose your credit is good; you have money but it is invested so you cannot readily withdraw it, and you wish to start a small factory.

It requires $10,000.00, and you borrow the entire amount, paying 5 percent interest.

We have decided that interest on borrowed money properly belongs to overhead, so $500.00 per annum should be so considered in this instance.

At the end of five years you have paid off the loan and have $10,000.00 paid up capital invested.

Five percent on $10,000.00 was considered a proper Overhead charge five years ago; why is it not proper now?

Five years ago the business was required to earn 5 percent in order to pay interest and (we will assume) 20 percent to pay on the principal.

Then you based your selling price on cost of raw material, productive labor and Overhead, which latter included $500.00 interest. Why should you today reduce your selling price and profit, simply because you are furnishing the capital instead of your creditor?

Are you not just as much entitled to demand $500.00 interest today from the business as your creditor was five years ago?

The main point is to see that you have it right and then adhere to it when you are estimating the cost of a job, and not trim it down for fear your competitor will land the contract by putting in a lower figure.

Care must also be used to see that the percentage of Overhead is increased when business is dull and your shop running at half capacity. Overhead is one thing that keeps on working twenty-four hours a day whether your shop is bustling with activity or closed down because of slack business.

You may think you are the boss of your business, but unless you are very careful, Overhead will be the boss of you.

When you ignore its demands you do so at your peril.

Overhead accepts no excuses from you for failure to fully understand its requirements.

Overhead is one of the hardest taskmasters, but by heeding its commands you will be rewarded.

Profit.

Years ago, when competition was less keen, expenses less and profits larger, the necessity for extreme care in figuring those profits was not as great as it is today, nor was it so essential that all business men use one standard on which to base their figures.

Men, in those days of smaller and more individual enterprise, were more secretive regarding their business affairs and the exchange of confidence of today was by no means so general at that time.

Today the conditions are different. Business men in the same line of trade discuss matters of mutual concern.

Banks are used by nearly everyone and the present custom of mutual exchange of confidence and experience between merchants, manufacturers and bankers, makes it very necessary, in order to avoid confusion and error, that one basis for computing profit should be used by all.

Profit always should be figured and based on selling price and not cost.. That is not only the general custom but is the best and safest way.

Sales totals are always available. Cost totals seldom are at hand. Salesmen's salaries, dividends, claims, cash discounts—in fact, nearly every computation is directly or indirectly based on sales. Therefore, it is a matter of safety (to say nothing of custom) to base your percentage of profits on sales alone.

It very often has occurred in a man's business experience, that he has endeavored to establish a selling price which would net him a certain percentage of profit, only to discover at the close of the year, that his estimated profit had not materialized—it being far below what he imagined during the year it would be. A faulty understanding regarding percentage is at the bottom of much of such trouble and some people of more than fair education never have clearly grasped the fact that if Will has 25 percent more marbles than James, James does not have 25 percent less than Will.

Ignorance on this simple point may mean the difference between profit and loss to you.

Let us suppose you are endeavoring to make your business earn a net profit of 25 percent on your total sales.

A contract is handed you to estimate and bid on. You figure:

Material required	$ 75.00
Labor required	25.00
Overhead required	24.00
Total Cost	$124.00

Now how much should be added to the total cost to net a profit on the sale of 25 percent?

If you figure 25 percent of $124.00 is $31.00, added to $124.00 = $155.00, and take the work at that figure you cannot possibly make your business earn 25 percent, because $31.00 is only 20 percent of your selling price, or $155.00.

Instead of adding 25 percent to your cost, add 33⅓ percent and see the result. 33⅓ percent of $124.00 = $41.33, which added to $124.00 = $165.33, and you find that $41.33 is 25 percent of $165.33, which should be your true selling price.

Depreciation.

No hard and fast rule regarding Depreciation can be laid down which will fit all cases. The usual difficulty is, the great tendency not to charge off enough; many declaring if they keep their buildings and equipment in good repair there is no business necessity or good sense in making an annual depreciation charge.

Our answer to such an argument is that we usually discover that it is the man who does not make a success of business who sees no necessity for giving the question of depreciation any consideration.

Some large concerns, with latest construction, fireproof buildings, charge off as low as from 2 percent to 5 percent annually on their buildings.

If a man has a cheaply constructed, temporary building, he should charge off 20 percent or 25 percent, to be conservative and safe.

Be sure to base your percent for depreciation each year on the original cost and not make the mistake of basing it upon the balance shown on your ledger for that account. For example:

Your new equipment has cost $5,000 and you have decided to depreciate it 20 percent, which would be $1,000, leaving the ledger balance for that account $4,000. At the close of the next year be sure to take 20 percent of $5,000 (the original cost and not $4,000 your ledger balance.

In this way you have been conservative and provided for a possible early demand for improved equipment and to that extent made your business what it should be—a self-sustaining and profitable enterprise.

Percentage.

We often have heard the expression "Figures do not lie," which saying is true as far as it goes, but there could be added, with equal truth—But they sometimes prove mighty puzzling.

In no part of mathematics, which is in common, every day use, does this puzzling problem more frequently arise than in percentage and in the daily transaction of all lines of business, nothing is more essential to success than a thorough knowledge of that part of your arithmetic.

Accustom yourself to thinking of the various details of your business in the form of percentage and not as lump sums.

If your total sales for 1910 were $50,000, your overhead $7,500 and your net profits $5,000, and in 1911 your sales were $60,000, your overhead $10,000 and your profits $4,200, do not sum up your analysis of the situation by saying your sales for 1911 were $10,000 more than in 1910, your overhead $2,500 more, and your profits $800 less, for that will not present the conditions as forcibly and accurately as though you stated it in percentage as follows:

	1910.	1911.	
Sales	$50,000	$60,000—20	% increase
Overhead	7,500	10,000—33⅓	% increase
Profit	5,000	4,200—16	% decrease

You will at once be forced to admit your overhead increased to an alarming extent and out of all proportion to your sales.

The next logical step is to see in what particular your expenses increased and reduce them or very materially increase your sales, without adding to the overhead.

Not infrequently persons have closed contracts, thinking they were to make a satisfactory profit, only to discover, upon completion, that their faulty knowledge of percentage had been the cause of disappointment and loss.

A dry goods merchant found he had $200 worth of specialties, on which he usually made a profit of 100 percent.

They were somewhat out of date and he felt it were better to dispose of them at a reduced profit and make room for more salable goods.

He called in a salesman and proposed that if he would undertake to dispose of the goods at a profit of 50 percent, he would be allowed a commission of 33⅓ percent on the sale, believing that would leave a profit for himself of 16⅔ percent.

The salesman accepted, sold the goods for $300, which was the amount agreed upon, and in settlement handed the merchant $200.

Mr. Merchant immediately protested that was not correct and that he should receive $233.33.

The salesman had a better knowledge of percentage and finally the merchant had to admit his error when the salesman figured the transaction in full for him as follows:

Cost of goods to merchant	$200
Amount realized from sale	300
Less 33⅓ percent commission on sale	100
Amount returned to merchant	200

The merchant simply made a very common error and had not realized that 50 percent added to cost is only 33⅓ percent of the selling price.

Cash Discount.

Every business man should so arrange his finances as to permit him to take advantage of all cash discounts. This is a premium or inducement offered by the jobber or manufacturer for prompt settlements and usually is a higher rate percent than the current bank rate of interest.

Taking advantage of all cash discounts not only enables one to increase his profits, but it is one of the greatest elements in establishing a good credit, which, together with good character, are the greatest assets any business man can possess.

There are many instances where, through calamity or misfortune, men have been forced into bankruptcy, who later have been able to again establish themselves in business and make a success, solely because of the fact they possessed character and credit.

The man who is entitled to, and usually does secure the most liberal line of credit, is he who is prompt in his settlements.

One who discounts his bills is careful to husband his resources, make every dollar of his capital work to the greatest possible capacity and is not apt to make the mistake and fall into financial embarrassment by trying to do more business than his cash resources warrant.

In the belief that some reader might not fully realize how much he loses by not discounting his bills, we add below a table, showing what percent per annum the most common cash discounts equal:

30 days net or	½%	10 days	9	% per annum
30 days net or	1 %	10 days	18	% per annum
30 days net or	2 %	10 days	36	% per annum
60 days net or	1 %	10 days	7⅕%	per annum
60 days net or	2 %	10 days	14⅖%	per annum

Credit.

Recently a gentleman, addressing a gathering of business men, said if he were asked to name the cheapest thing in the United States he would say Credit. Good credit is the greatest asset any man can possess and it is a deplorable fact that many do not appreciate it at its full value and make little effort toward keeping it at the highest possible standard.

While many things go to make up Credit, the keynote is honesty. Some men are fundamentally honest and would scorn to deceive or take any mean advantage.

Others are only legally honest and always are on the lookout for an opportunity to get ahead of their fellowmen, taking care not to actually come within the grasp of the law. The latter class is apt to wait until the maturity of a bill before filing a claim for shortage, damage or overcharge.

Oftentimes the claims are wrong and they know it, but they also know several days must elapse before the claim can be investigated and in the meantime they are obtaining free use of the money.

If they discount a bill they are apt to pay in fifteen days instead of ten as the terms call for.

Such practices are not uncommon and are in reality a form of dishonesty and hurt one's credit.

Manufacturers and jobbers, to some extent, are responsible for the condition which tended toward cheapening credit.

During the last quarter of a century, all lines of business have been growing with great rapidity and the desire to increase sales often has caused men to lose sight of conservatism, and be less careful and watchful as to credits.

Keen competition and a desire to get a customer away from a rival has induced many to sell to men of shady character and questionable reputation.

Next in importance to honesty, in the establishing of credit, come ability and capital.

Ability enters into every detail of mercantile life and it needs no argument to prove that without it, success is impossible. Lack of capital is a most common cause of poor credit and financial failure. Statistics show one-third of the failures in this country are directly traceable to that cause.

It is of the greatest importance that the volume of your business be kept within the limits of your capital to safely care for it.

If your own funds, or in the case of a corporation, if your paid-in capital stock is insufficient, some special arrangement, in the shape of a long-time loan, should be made to provide the necessary funds.

It is a common, though dangerous, practice, with some to expect their bank and merchandise creditors to furnish what they lack.

The danger lies in the fact that such short time arrangements do not give one time enough to work out, and as payment of such loans can be demanded at short periods, it is apt to prove embarrassing, if nothing else.

Aside from using it for the purpose of depositing and checking, your bank should be looked to for only short time accommodations, to enable you to discount your bills or meet pay rolls when collections have been disappointing.

No man can afford to lose sight of the profit that can be derived from taking advantage of cash discounts. It is a good business proposition to borrow of your bank at 6% and discount a bill with terms of "30 days—½% 10 days."

A short time loan, paid when due, is the ideal class of paper for the average commercial banker to handle and the man who discounts his bills is sure to find favor with his merchandise creditor.

Such a man is not apt to spread out too much, but keeps his affairs well in hand and in periods of business depression is not subject to the embarrassment of being constantly importuned by his creditors. If you wish to command the confidence and respect of those with whom you deal and be free from an excess of worry:

Be honest with yourself and others.
Be conservative.
Be sure you know your actual cost.
Sell only at a profit.
Keep insured.
Discount your bills.
Beware of debt.
Make few promises and keep them.
Do not undertake more than your capital warrants.
Collect your accounts promptly.

Do not fear offending a customer by demanding payment of a bill that is due.

Constantly study the requirements of your business, keep abreast of the times and avoid falling into a rut.

NOTES AND QUERIES.

Ice Machines.

From the Johnson Hardware Company, Keystone, Iowa.

Kindly advise who manufactures ice machines.

Ans.—Boland Machinery Company, 552 West Van Buren Street; Creamery Package Manufacturing Company, 61 West Kinzie Street; Kroeschell Brothers Ice Machine Company, 472 West Erie Street; Larsen Ice Machine Company, 111 West Monroe Street, all of Chicago, and the Murray Iron Works Company, Burlington, Iowa.

Eclipse Soldering Furnace.

From the Farwell Cornice Company, 3955 Southport Avenue, Chicago.

Please tell us who makes the Eclipse Soldering Furnace.

Ans.—Eclipse Fuel Engineering Company, Rockford, Illinois.

Insulated Aluminum Wire.

From Harry C. Staton, 1213 South Central Avenue, Burlington, Iowa.

Can you tell me who makes insulated aluminum wire for electric light work?

Ans.—Aluminum Company of America, Oliver Building, Pittsburgh, Pennsylvania.

Superior Soldering Furnace.

From the Farwell Cornice Company, 3955 Southport Avenue-Chicago.

Will you kindly advise who makes the Superior Soldering Furnace?

Ans.—Jacobson Machine Manufacturing Company, Warren, Pennsylvania.

Tin Covered Fire Doors.

From Schobinger Brothers, Shullsburg, Wisconsin.

Please tell us where we can purchase tin clad fire doors with automatic closing fixtures for single swinging doors.

Ans.—Underwriters Hatch Door Company, 1741 Walnut Street, Chicago; Consolidated Sheet Metal Works, 661 Hubbard Street, Milwaukee, Wisconsin; Dusing and Hunt, 386 Michigan Avenue, Buffalo, New York; and Empire Art Metal Company, College Point, Long Island, New York.

Champion Ventilators.

From L. R. Hamman, 321 East Main Street, Decatur, Illinois.

Kindly tell me who makes the Champion Ventilator.

Ans.—J. E. Porter, Ottawa, Illinois.

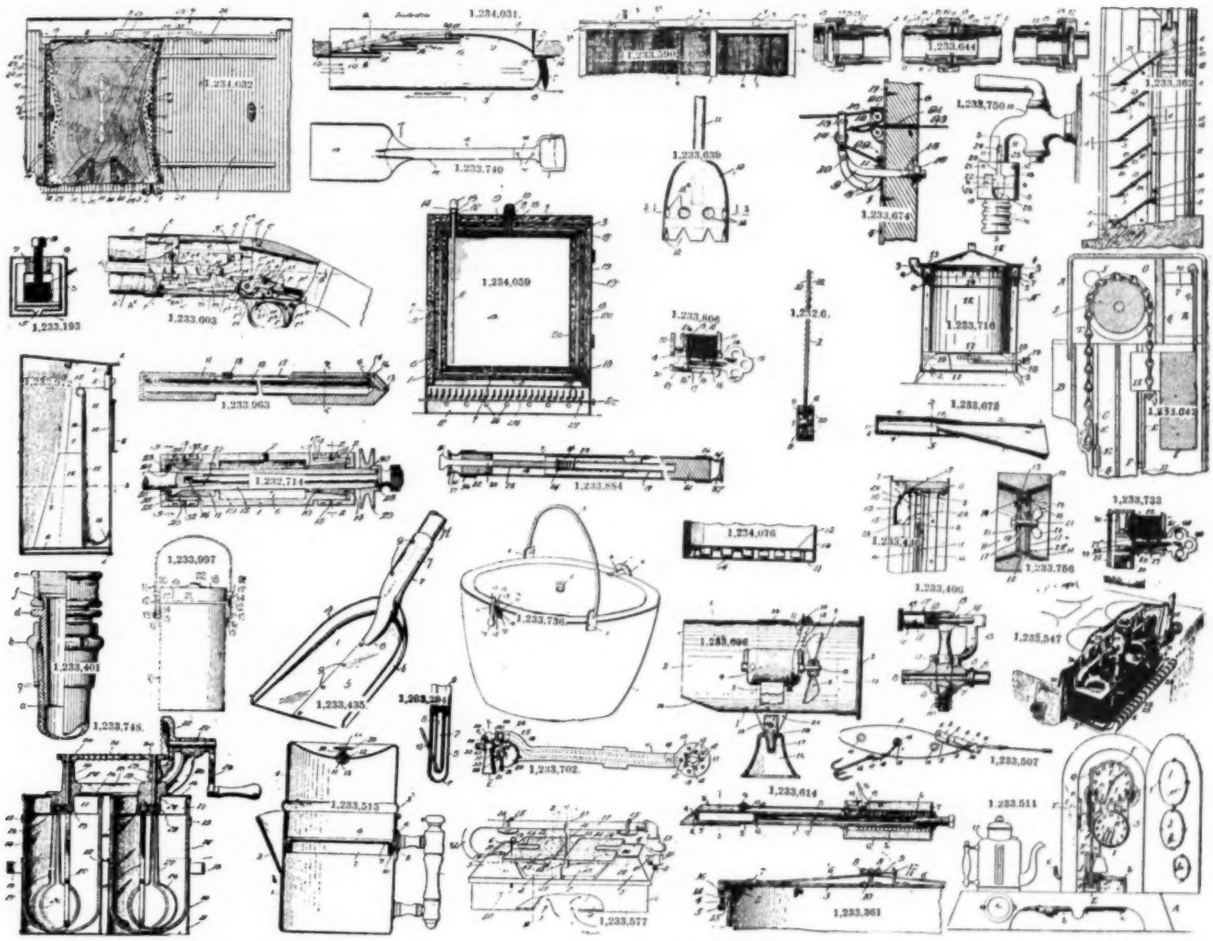
Sandwich Gasolene Engine.

From Goetz Brothers, West Chicago, Illinois.

Can you tell us who makes the Sandwich Gasolene Engine?

Ans.—Sandwich Manufacturing Company, Sandwich, Illinois.

NEW PATENTS.



1,232,613. Adjustable Try-Square. John Scheeder, New York, N. Y. Filed Aug. 25, 1916.

1,232,714. Tool Holder and Driver. Carl G. Olson, Chicago, Ill., assignor to Illinois Tool Works, Chicago, Ill.

1,233,193. Apparatus for Treating Saws. Lawrence Le-Roy Cook, Indianapolis, Ind. Filed March 9, 1917.

1,233,294. Clothes Pin. Ferdinand Anderson, Detroit, Mich. Filed Aug. 27, 1915.

1,233,361. Cover for Garbage Receptacles. Eric Earl Houston, Asbury Park, N. J. Filed Sept. 11, 1916.

2,233,362. Ventilator. Samuel W. Jackson, Chicago, Ill.

1,233,401. Hose-Coupling. John H. Reeve, Sherman, Cal. Filed Jan. 19, 1916.

1,233,406. Gas-Stove-Valve-Control Means. Robert W. Scholl, Appleton, and Sylvester F. Adrian, Stevens Point, Wis. Filed Jan. 26, 1917.

1,233,435. Shovel. Albert L. Adams, Cedar Rapids, Iowa. Filed April 14, 1916.

1,233,436. Window-Ventilator. Peter Baar, Chicago, Ill.

1,233,507 Fish Bait or Lure. James W. Reynolds, Chicago, Ill. Filed March 1, 1917.

1,233,511. Time-Controlled Stove. Gennaro Rosa, Brooklyn, N. Y. Filed July 18, 1916.

1,233,515. Coffee-Pot. Philip H. Serio, Elmira, N. Y., assignor to National Aluminum Works, Elmira, N. Y. Filed Nov. 29, 1916.

1,233,547. Hydrocarbon-Burner. Henry Brubaker, York, Pa., assignor to W. C. Koller, York, Pa. Filed Nov. 8, 1916.

1,233,577. Oil-Burner. Delton I. Hoch, Columbus, Ohio.

1,233,590. Attachment for Screens. Sterrett E. McNulty, Washington, D. C. Filed Oct. 1, 1915.

1,233,603. Firearm. Edward E. Redfield, Glendale, Ore.

1,233,614. Soldering-Iron. Howard C. Self, Mount Union, Pa. Filed Jan. 4, 1917.

1,233,639. Clothes-Pounder. Susan G. Bergh, West New York, N. J. Filed Oct. 24, 1914.

1,233,642. Apparatus for Closing Window Sashes. Harry E. Campbell, New York, N. Y. Filed Nov. 13, 1916.

1,233,644. Hose-Coupling. Albert G. S. Clark, St. Petersburg, Fla., assignor to one-half to William Mosedale, St. Petersburg, Fla. Filed Oct. 23, 1915.

1,233,673. Ice-Shaver. Frank B. Kinney, Syracuse, N. Y., assignor of one-half to John M. Smith, Syracuse, N. Y.

1,233,674. Gate-Latch. Louis Kirsch, Polar, Wis. Filed Sept. 8, 1916.

1,233,696. Fly-Catcher. Harry Pakeman, Columbus, Ohio. Filed Nov. 15, 1915.

1,233,702. Combined Gas Burner and Lighter. George E. Pickup, Newark, Ohio, assignor to The Wehrle Company, Newark, Ohio. Filed Feb. 14, 1917.

1,233,716. Combination Ventilated Laundry Stove and Boiler. Abraham Shapiro, Minneapolis, Minn. Filed April 8, 1916.

1,233,733. Lock. Henry G. Voight, New Britain, Conn., assignor to Sargent & Company, New Haven, Conn. Original application filed May 4, 1916. Divided and this application filed March 19, 1917.

1,233,736. Cooking Utensil. Eugene A. Wheeler, Barryton, Mich. Filed Aug. 3, 1916.

1,233,740. Shovel. Albert L. Adams, Cedar Rapids, Iowa. Filed June 23, 1916.

1,233,748. Driving Mechanism for Double Egg-Beaters. Marion G. Briscoe, Knoxville, Tenn. Filed May 23, 1916.

1,233,750. Hose Connection. Alfred C. Butcher, Staatsburg, N. Y. Filed Feb. 25, 1916.

1,233,756. Spirit-Level. Seberon J. M. Cox, Bristow, Okla. Filed June 19, 1916.

1,233,806. Lock. Charles F. Raymond, New Haven, Conn., assignor to Sargent & Company, New Haven, Conn. Filed May 3, 1916.

1,233,884. Adjustable Window-Screen Emil Kraemer and George Schuler, Woodside, N. Y. Filed June 14, 1916.

1,233,963. Soldering-Iron. William A. Biltonen, Houghton, Mich. Filed March 30, 1915.

1,233,972. Combined Mail-Box and Milk-Bottle Holder. John Lloyd Bryfogle, Necopeck, and Jeremiah B. Kester, Mainville, Pa. Filed Jan. 26, 1917.

1,233,997. Garbage-Can. Edward J. Eichelberger, Baton Rouge, La. Filed Nov. 25, 1916.

1,234,031. Ventilator. William G. Hutchison, Valparaiso, Ind. Filed Oct. 24, 1916.

1,234,032. Door-Hanger. Oscar Illi, Pocatello, Idaho.

1,234,059. Fireless Cooker. Nelson A. McQueston, Mansfield, Ohio; Laura H. McQueston, administratrix of said Nelson A. McQueston, deceased, assignor to Lambert H. McQueston, Mansfield, Ohio. Filed March 16, 1916.

1,234,076. Washboiler. Paulina Owsiak, Fall River, Mass. Filed April 30, 1917.

WEEKLY REPORT OF TRADE AND THE MARKETS

STEEL TRADE AT STANDSTILL.

The recent price conference of steel men in Washington has had a most important effect in that the steel trade has reached a deadlock. Buying has ceased and it also may be said that selling has ceased. Makers are refusing to make commitments except to a few old customers and these are being supplied at contingent prices.

A final answer to the question of how far government action in iron and steel prices will extend, is still to be given. The various reports and opinions, however, are being converted into a growing belief that no sweeping federal policy is to be pursued. The defeat of a regulatory amendment, pertaining to iron and steel, in the control bill in the Senate has been an important factor in crystallizing sentiment along this line. It also suggests that Washington is not so anxious to undertake the complications of complete price control.

With this more moderate view of federal interference with the general market, there has appeared among the iron and steel producers a more marked disposition to keep prices within bounds; and the determination to hold the market in check along with the arresting effect on buying caused by the unsettled Government situation, points to more stable price conditions for the immediate future, at least.

The sellers and the buyers alike appreciate that the cause of the slack market is not so much the high level of prices as the chance that they will be forced lower, and they feel that if the question were settled, buying would be resumed regardless of the level of the prices. Competitive buying would be resumed and the prices would continue to go up.

For these reasons a price established by the government provided it is a fair price, is regarded in some circles of the trade as preferable to an open market. If the price basis established is fair there is a disposition in the trade to meet the proposal put forth by the government that the Allies be accorded the same treatment accorded this government.

Makers continue to cooperate freely with the Government in granting sharp reductions from established prices on war business. The situation is illustrated by sheets, where a large tonnage is being obtained at $45 to $60 a ton under the open market. In tin plate, the concession is $30 per ton under the minimum market quotation and over $100 under the maximum.

Prices of wire products quoted by independent makers have not been affected to date by the recent announcement of a $3.20 maximum on nails by the American Steel & Wire Company, and further quotations of $4 per keg were put out by the independent producers during the week.

STEEL.

In the Chicago market, plate tonnages continue to be distributed by the Government, and these additional tonnages, it is understood, have been distributed to the mills on a pro rata basis of capacities. That mills are reserving capacities for further Government work is shown in the fact that the leading independent in this district has been out of the market for sometime and refuses all plate inquiries. Numerous inquiries for hard steel bars, which are quoted at 4.50 cents, Chicago, is reported by the leading independent. Efforts are being made to cover the requirements of general customers, and, although no large tonnages have been accepted, the volume of business done has reached a fair total. Conditions similar to those which have existed for some weeks are reported by fabricators of steel shapes. The propaganda to restrict the amount of commercial and industrial expansion has served further to curtail general building activities, and the lack of sales in the open market has precluded the possibility of any price changes.

COPPER.

The copper market during the past week has undergone a noticeable decline, this situation resulting from concessions by small holders in the vain attempt to attract buyers. The large sellers remained out of the market. Despite the dullness and feeling of uncertainty as to the outcome of labor difficulties at the mines, supplies are reported to be ample, and the refinery production of copper for June is estimated at 200,000,000 pounds, including imported as well as American copper. The total output of refined copper for the first half of this year is figured at 1,055,000,000 pounds as against a total production for the entire year of 1916 of 2,256,000,000 pounds. Prices on copper are wholly nominal, with quotations on Electrolytic as follows on a basis of cash, New York: Spot, 26¼ to 26¾ cents; August, 25¾ to 26¼ cents; September, 25¼ to 25½ cents, and fourth quarter, 24¼ to 24¾ cents. Owing to the lack of offerings, Lake copper may still be quoted at 28½ to 29 cents cash, but it is believed that were any business to materialize, the quotations would be considerably lower. Casting copper for prompt shipment is holding nominally at 26¼ to 26¾ cents. Chicago warehouses have dropped prices on sheet copper 1 cent a pound, the quotation now being 38 cents.

TIN.

The tin market in New York now holds at about 62½ cents on Straits for prompt shipment. The demand has been quiet, but supplies have been very scarce and no export shipments have been reported. Chicago warehouses have decreased prices on pig and

bar tin 1 cent a pound, the new quotations being 69 cents for pig tin and 70 cents for bar.

LEAD.

Although labor conditions in the southwest Missouri district are said to be slightly improved, the situation in the lead market is yet by no means satisfactory, and the uncertainty as to production is deterring producers from undertaking new business. Buying of lead during the week has been virtually a dead issue, and it is estimated that present production is running about 15,000 tons a month under normal as a result of strike trouble. The leading interest continues to quote 11 cents, New York, on current contracts, and outstanding holders are quoting nominally at 10¼ to 10½ cents, St. Louis, for July and August shipment.

SOLDER.

Prices on solder have been decreased ½ cent a pound by Chicago warehouses, and quotations are now as follows: XXX Guaranteed, ½ & ½, 39 cents; Commercial, ½ & ½, 37 cents; Number 1 Plumbers', 35 cents.

SPELTER.

As a result of a fair amount of buying by consumers and brokers, there has been a slightly better tone in spelter within the past few days and prices have been advanced about ⅛ of a cent a pound. The market is nevertheless far from being in a firm position, and little buying on the part of consumers is expected until the situation in Washington becomes more settled. Prime Western is quoted at about 8½ to 8⅝ cents for Prompt and July. Brass special has not been in much demand, and Prompt is quoted nominally at 9 to 9¼ cents, St. Louis.

SHEETS.

The Government continues to buy steel sheets on a constantly increasing scale, although little or nothing is being said about contracts being placed for military purposes. As previously stated, the Government has obtained steel sheets at many dollars a ton below the prices being paid by domestic interests. In the Chicago district a leading independent has been asked to accept Government contracts for sheet tonnages, and definite orders are expected to be placed shortly. These sheets will be in addition to those called for by recent contracts for plates for cantonment stoves. Practically no sales of sheets have been made in the open market and quotations remain unchanged.

TIN PLATE.

Now that tin plate manufacturers have rolled practically enough material to take care of the season's perishable food crops, mill managers are now offering their product to the Government and its allies. Some material is being purchased directly by the Government for the manufacture of cases for shell parts and this is being sold at about $8.50 base. The Allies are apparently in urgent need of additional amounts of tin plate and both England and Italy have made inquiries for large tonnages. It will more than likely be several months before manufacturers consider prices for shipment in the first half of next year, and it is believed that new contracts will be placed at several dollars a ton above the price at which books were opened for shipment for the second half of 1917. Chicago warehouses have advanced prices on first quality bright tin plate from $1.50 to $3.00 per box. IC, 14x20, is now quoted at $16.60 and IXXXX, 14x20, at $23.40. Coke plates have been advanced $2.50 per box and cokes, 180 pounds, 20x28, are now quoted at $29.80.

NUTS AND BOLTS ADVANCE.

The Government is calling upon nut, bolt and rivet manufacturers for material on a constantly increasing scale and domestic consumers are finding it increasingly difficult to obtain their requirements. Although no firm advances have been made, previous prices no longer represent the market and nuts generally have been advanced 5 percent and bolts 5 to 10 percent.

OLD METALS.

The dull market on iron and steel scrap in Chicago has been emphasized by declining prices during the week. Quotations on steel making grades have been reduced from $1.00 to $4.00 and further reductions are expected within the next few weeks. Consumers are apparently well stocked and it appears that they are keeping their inventories low until the prevailing uncertainty is dispelled. Wholesale dealers' quotations, which may be considered nominal, are as follows: Old steel axles, $46.00 to $48.00; old iron axles, $46.00 to $48.00; steel springs, $39.00 to $40.00; Number 1 Wrought iron, $35.00 to $36.00; Number 1 Cast iron, $24.00 to $25.00, all net tons. Prices for non-ferrous metals are as follows, per pound: Light copper, 20 cents; light brass, 12½ cents; lead, 7¾ to 8¼ cents; zinc, 6 cents; cast aluminum, 25 cents.

PIG IRON.

During the past week, backward price tendencies of moderate extent, most of which are related to resale metal, have been noticed in the pig iron market. A week ago bessemer was principally involved in these irregularities, but now other grades have been affected. Some of the furnaces have taken voluntary action against further advances, and in so doing have fixed their maximum figure two or three dollars under that at which they recently have made some sales. In different districts, $55.00, furnace, is now regarded as the top level on foundry, malleable and basic irons. In the Chicago market, practically no activity is evident. The prices on Northern grades are firm, but little iron is available for this year or first half of next, as the furnaces are booked to capacity. Iron is very scarce for delivery this year because of the sold-up condition in the market, and when carload lots are available for spot delivery, the market price is paid without hesitancy. Shippers of Southern iron report transportation difficulties and several Southern stacks have been banked because of the shortage of coke.

Current Hardware and Metal Prices.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS.

PIG IRON.

Basic	$55 00
Northern Pdy., No. 2	55 00
Southern Pdy., No. 2	$50 00- 54 00
Lake Sup. Charcoal	59 50- 62 00
Malleable	55 00

FIRST QUALITY BRIGHT TIN PLATES.

		Per Box
IC	14x20	$16 60
IX	14x20	18 55
IXX	14x20	20 50
IXXX	14x20	21 90
IXXXX	14x20	23 40
IC	20x28	33 20
IX	20x28	37 10
IXX	20x28	41 00
IXXX	20x28	43 90
IXXXX	20x28	46 80

COKE PLATES.

Cokes, 180 lbs	20x28	$29 80
Cokes, 200 lbs	20x28	30 00
Cokes, 214 lbs	IC 20x28	30 50
Cokes, 270 lbs	IX 20x28	33 00

BLUE ANNEALED SHEETS.

No. 10 per 100 lbs.	$9 30
No. 12 per 100 lbs.	9 35
No. 14 per 100 lbs.	9 40
No. 16 per 100 lbs.	9 50

ONE PASS COLD ROLLED BLACK

No. 18-20 per 100 lbs.	$9 55
No. 22-24 per 100 lbs.	9 60
No. 26 per 100 lbs.	9 65
No. 27 per 100 lbs.	9 70
No. 28 per 100 lbs.	9 75

GALVANIZED

No. 16 per 100 lbs.	$11 00
No. 18-20 per 100 lbs.	11 15
No. 22-24 per 100 lbs.	11 30
No. 26 per 100 lbs.	11 45
No. 27 per 100 lbs.	11 60
No. 28 per 100 lbs.	11 75
No. 30 per 100 lbs.	12 25

POLISHED SHEET STEEL.

No. 24 per 100 lbs.	$10 05
No. 26 per 100 lbs.	10 10
No. 27 per 100 lbs.	10 15
No. 28 per 100 lbs.	10 25

SMOOTH SHEET STEEL.

	Per 100 lbs.
Wood's Smooth No. 20	$9 75
" " No 22-24	9 80
" " No 25-26	9 85
" " No. 27	9 00
" " No. 28	10 00

PATENT PLANISHED SHEET IRON.

Patent Planished Sheet Iron, 100 lbs., base No. 28 ..... $13 75

SOLDER.

XXX Guaranteed ½ & ½ per lb.	39c
Commercial ½ & ½ "	37c
No. 1 Plumbers "	35c

SPELTER

In Slabs 10c

SHEET ZINC.

Cask lots	$22 00
Less than Cask lots	$22 50 to $23 00

COPPER.

Copper sheet, base 38c

Soldering.

3 lb. and heavier per lb.	48c
2½ lb. " "	49c
2 lb. " "	50c
1½ lb. " "	51c
1 lb. " "	54c

LEAD.

American Pig	$11 50
Bar	12 00
National (White) brands (in less than 100 lb. lots), per lb.	11c

Sheet.

Full coils per 100 lbs.	$13 25
Cut coils per 100 lbs.	13 50

ALUMINUM

Carload lots.

No. 1 Pure Ingot per lb.	$0 60
Sheets "	75

TIN.

Pig tin per lb.	69c
Bar tin "	70c

HARDWARE.

ADZES.

Carpenters'.

Plumbs	15%

Coopers'.

Barton's	15%
White's	15%

Railroad.

Plumbs	20%

AMMUNITION.

Caps, Percussion—per 1,000.

F. L., Waterproof, 1-10s	32%
G. D	32%
Musket	32%

Shells, Loaded—

Loaded with Black Powder	32%
Loaded with Smokeless Powder, medium grades	32%
Loaded with Smokeless Powder, high grade	32%

Winchester:

Smokeless Repeater Grade	32%
Smokeless Leader Grade	32%
Black Powder	32%

J. M. C.

Nitro Club	32%
Arrow	32%
New Club	32%

Gun Wads—per 1000

Winchester 7-8 gauge	$2 25
" 9-10 gauge	1 94
" 11-28 gauge	1 63

Powder.	Each
DuPont's Sporting, kegs	10 25
" " ½ kegs	5 40
" " ¼ kegs	2 85
DuPont's Canisters, 1-lb	56
" " ½-lb	32
" Smokeless drums	43 50
" " ¼-kegs	11 25
" " 10-can drum	9 00
" " ⅛-kegs	5 75
" " canisters	1 00
L. & R. Orange, Extra Sporting kegs	10 25
L. & R. Orange, Extra Sporting ½-kegs	5 40
L. & R. Orange, Extra Sporting ¼-keg	2 85
L. & R. Orange, Extra Sporting 1 lb. canisters	56
L. & R. Orange, Extra Sporting ½-lb. canisters	32
L. & R. Orange, Extra Sporting ¼-lb. canisters	22
Hercules "E. C." and "Infallible" 50 can drums	43 50
Hercules "E. C.," kegs	22 00
Hercules "E. C.," ½-kegs	11 25
Hercules "Infallible," 25 can drums	22 00
Hercules "Infallible," 10 can drums	9 00
Hercules "E.C.," ¼-kegs	5 75
Hercules "E.C." and "Infallible" canisters	1 00
Hercules W. A. .30 Cal. Rifle, canisters	1 25
Hercules Lightning Rifle, canisters	1 25
Hercules Sharpshooter Rifle, canisters	1 25
Hercules Unique Rifle, canisters	1 50
Hercules Bullseye Revolver, canisters	1 00

ANVILS.

Trenton, 70 to 80 lbs.	9½c per lb.
Trenton, 81 to 150 lbs.	9¼c per lb.

ASBESTOS.

Board and Paper, up to 1/16"..17c per lb. Thicker...18c per lb.

AUGERS.

Boring Machine	60%
Irwin's	25%
Carpenter's Nut	50&10%

Hollow.

Bonney's—list $30.00	75 & 5%
Stearns, No. 3	36 00

Post Hole.

Digwell, 8-inch per doz.	$12 50
Iwan's Post Hole and Well	35%
Vaughan's, 4 to 9-in. per doz.	8 25

Ship.

Ford's, with or without screw	25%
Snell's " " "	25%

AWLS.

Brad.

No. 3 Handled per doz.	$0 50
No. 1050 Handled "	1 05
Shouldered, assorted 1 to 4, per gro.	4 00
Patent asst'd, 1 to 4 "	85

Harness.

Common "	1 05
Patent "	1 00

Peg.

Shouldered "	1 60
Patent "	75

Scratch.

No. 1 handled per doz.	65
No. IS, socket han'ld. "	1 35
No. 7 Stanley "	1 95

AXES.

Boy's Handled.

Niagara "	9 00

Broad.

Plumbs, West, Pat List	
" Can. Pat	$53 00
" Firemen's (handled), per doz.	$19 00

Single Bitted (handled).

Warren Silver Steel	14 00
Warren Blue Finished	13 00
Rough Rider	12 50
Perfect Premier, Forest Clipper	12 25

Single Bitted (without handles).

Warren Silver Steel	12 00
Warren Blue Finished	11 50
Rough Rider	11 00

Double Bitted (without handles).

Blood's Champion, 3½ to 4½ lb. per doz.	14 75
Flint Edge "	11 50
Perfect Premier "	12 50

The above prices on axes of 3 to 4 lbs. are the base prices.

3½ to 4½ lbs. advance 25c.
4 to 5 lbs. advance 50c.
4½ to 5½ lbs. advance 75c.

BAGS, PAPER NAIL.

Pounds	10	16	20	25
Per 1,000	$2 50	3 75	4 50	5 00

BALANCES, SPRING.

Pelouze 20%

BARS, CROW.

Pinch or Wedge Point, per cwt. $8 00

BASKETS.

Clothes.

Small Willow per doz.	10 00
Medium " "	11 00
Large " "	13 00

Galvanized Iron.	½ bu.	1 bu.	1½ bu.
Per doz.	$8 00	11 50	15 00

BEATERS.

Carpet.	Per doz.
No. 17 Tinned Spring Wire	$ 1 10
No. 18 Spring Wire coppered	1 40
No. 10 Preston	1 10

Egg.	Per doz.
No. 50 Imp. Dover	$ 1 10
No. 102 " " tinned	1 35
No. 150 " " hotel	2 10
No. 10 Heavy hotel tinned	2 10
No. 13 " " "	3 30
No. 15 " " "	3 60
No. 18 " " "	4 50

BELLOWS.

Blacksmiths' 40%

Hand.

	8	9	10	12
Per doz.	$8 00	9 00	10 00	12 75

Moulders'.

12-inch Per doz.	15 00

BELLS.

Call.

3-inch Nickeled Rotary Bell, Bronzed base per doz.	$5 00

Cow.

High Grade	60%
Kentucky	35%

Door.	Per doz.
New Departure Automatic Rotary.	$7 50
3 -in. Old Copper Bell	5 00
3 -in. Old Copper Bell, fancy	7 00
3 -in. Nickeled Steel Bell	5 50
3½-in. Nickeled Steel Bell	6 00

Hand.

Hand Bells, polished	15%
White Metal	15%
Nickel Plated	10%
Swiss	15%
Silver Chime	10%

Miscellaneous.

Church and School, steel alloys	30%

Farm, lbs.	40	50	75	100
Each	$2 25	3 00	4 00	5 50

BEVELS, TEE

Stanley's, rosewood handle, new list	Nets
Stanley's iron handle	Nets

BINDING, OILCLOTH.

Zinc	65%
Brass	50&10%
Brass, plated	70&10%

BITS.

Auger.

Jenning's Pattern	40&10%
Ford's Car and Machine	30%
Ford's Ship	30%
Irwin	35%
Russell Jenning's	30%
Clark's Expansive	50&5%
Steer's " Small list, $22 00	25%
" " Large " $26 00	25%
Irwin Car	35&10%
Ford's Ship Auger pattern Car	30%

Center 10%

Countersink.

No. 18 Wheeler's	per doz.	$1 80
No. 20 "	"	2 40
American Snailhead	"	1 10
" Rose "	"	1 30
" Flat	"	1 20
Mahew's Flat	"	1 00
" Snail	"	1 50

Dowell.

Russell Jennings	30%

Gimlet.

Standard Double Cut		25%
German Pattern	per doz.	$0 75
German	"	80
Gouge	"	80
Spoon	"	15%
Countersink	"	1 30

Reamer.

Jenning's Square	"	2 50
Standard Square	"	2 00
American Octagon	"	1 75

Screw Driver.

No. 7 Common	"	75
No. 1 Triumph	"	1 25